PRACTICAL METHODS FOR TEACHING ELEMENTARY GEOGRAPHY

BY

WILLIAM C. T. ADAMS

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Practical Methods

FOR TEACHING

Elementary Geography

BY

WILLIAM C. T. ADAMS

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INTRODUCTION BY

A. E. WINSHIP

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INTRODUCTION

NOTHING in the elementary school has higher educational significance than learning how to learn geography. It is the first real educational art that comes to the child in school.

Learning to read is learning to use a given tool in a given way for a definite purpose. It has in view the use of books for information and enjoyment, and also for the art of expressing through reading the thoughts of others. Learning to write is learning the use of an educational tool for convenience and for service. Learning number is learning tools and their use for many purposes.

In each case there is a definite end to be attained and a specific way to attain it. To know the thing to be done and then to attain greater skill in the doing of it is the purpose in learning to read, to write and to use number.

One studies geography with an entirely different end in view. One can never know geography as he knows how to read, write and cipher. There is nothing to be so learned that one can say "I know geography." Everyone knows a lot of geography. No two persons in school or out have the same knowledge

of geography. The most stupid child above the third grade knows much geography that his teacher does not know, could give her a geographical test on which she would fail utterly and on which he would get a hundred per cent. All that could be assumed in a test would be that there are a few things which everyone in that grade, in that school, at that time should know.

In "Practical Methods for Teaching of Elementary Geography" the author demonstrates keen appreciation of the difference between the learning of other elementary subjects and the learning of geography, a difference as great as between the carpenter and the architect.

It is impossible for a child to grasp the significance of what he learns in geography. He may believe that the earth rotates, that it revolves about the sun, that the inclination of the earth's axis causes the seasons but he cannot realize any of these things any more that he can appreciate a million.

He can build up a million theoretically by seeing that ten tens make one hundred, ten hundreds one thousand and so up the decimal ladder to a million but it has no real significance. In a similar way a teacher can build up for a child the idea of a mountain a mile high, two miles high, three miles high; of a river one thousand miles long, of an ocean three thousand miles wide, of a city with five million inhabitants, of a yield of billions of bushels of grain, but it has slight significance.

There are certain local phases of geography which a child can learn, can really appreciate. They must always be comparative. He can appreciate that the school room is 20 feet wide and 30 feet long; that the school house faces east and the sun rises in the east, while his home house faces west and the sun sets in the west; that the bases in the ball field make a diamond, and that the bases should always be the same distance apart; that a pure blood calf is worth a lot more than one with a pure bred sire and a mongrel or scrub mother, and a calf one of whose parents is pure bred is worth much more than one in which neither is pure bred; that it is four blocks, in a city or half a mile in the country to the grocery store; that the teacher is selected by the school board, that the county superintendent is elected by the county, that the Governor by the State, and the Post Master, or Rural Free Delivery man is paid by the United States Government.

It is possible to build up geographical units so carefully and vitally that a child can ultimately appreciate mountains, rivers, lakes, oceans, continents as he can appreciate a million through decimal units.

The real teaching of elementary geography is the art of vitalization, just as definitely as the laying of a wall is the ability to have each new stone rest securely on those already laid. All this the author appreciates in the writing of "Practical Methods for Teaching Elementary Geography."

In school and out every child has geography lessons

thrust upon him at every turn. The sunrise and the sunset, whatever he eats, drinks and wears; the cow he milks, the pig he feeds; the sidewalk, the roadway, the fences, the street car, the railroad, the telegraph, the telephone—everything is a geography lesson.

The children in the school have inheritances from many lands; the men from whom the city child buys fruits and vegetables, groceries and provisions, nuts, raisins and candy come from various lands and sell goods from everywhere. He can read no lesson in his school reader, can read no paper or magazine without finding himself thinking geography.

Teaching elementary geography is guiding the thought of children, inspiring the life of children, to function in geographical units unconsciously everywhere all the time. This is a teaching art not called for until the child studies geography.

Prepotency is a word used all too little in education. It is born of stock men. It is the rare power that a sire has of giving to his offspring a greater power than he possesses, or the giving to his offspring through the heifer of another breed more of the sire's breed than of the mother's breed. Fabulous prices are paid only for pure breeds in whose offspring there is a potency greater than in the parent. A Duroc Jersey sow sold for $11,000 in January 1921 because her litter the previous April sold for $15,000. The value of the offspring determines the price of an animal as well as—often more than—the value of the ancestors.

Education should be valued by the worth of pupils educated rather than by institutions in which teachers were educated. Prepotency should be the educational degree that counts. Geography is distinctively the prepotency subject in the elementary curriculum. Geography, taught as Dr. Adams would have it taught, inspires a child to think in larger units than he is otherwise taught to think. A sixth-grade pupil who has not learned many things in geography that his teacher does not know has not been well taught.

"Practical Methods for Teaching Elementary Geography" renders invaluable service by making the teacher of the art of learning geography think in the units of every great thinker in geographical terms, from prehistoric geography to the prophetic geography of to-day.

It is an inestimable service to help a teacher of elementary geography of the present think of the geography of Homer and Heroditus.

Every modern geographical writer says that a knowledge of geology is indispensable to a knowledge of physical geography, but it is here said that the geography of the Phoenicians was fundamental to the geography of Carl Ritter and Guyot, who in turn were the forerunners of Hinman and Redway, Davis and Frye, Dodge and McMurry, Atwood and Baldwin.

It is well to realize that there was a time when political geography was not a moving picture in which one scene swings into the next without note or comment.

Dr. Adams brings into view everything that is worth knowing about everything that has been evolved in the centuries about all phases of geography. Out of his knowledge he has created a composite of principles and methods and has adapted it all to each grade, and to each feature in which geography should function in the elementary school.

For thousands of years the mission of geographical thought was to know what the earth could do for man; now it is largely its mission to know what man can do with the earth.

Astronomical geography created works of art out of the stars. The Great Bear dominated the starry hosts for centuries before science suspected that its message was one of safety to wayfarers on sea and land by pointing the way to the Pole Star.

In much the same way earth-traditional geography lorded it over the schools before pedagogical genius discovered that the purpose of earth-geography was merely to point the way to man's dominance over the earth.

The blinding flash of lightning and the fierce roaring of thunder terrorized the sons of men until a keen-witted son of the New World hypnotized the lightning which now carries messages of love and cheer with all the fervor and sweetness of the human voice. The New Geography is to the Old as science is to superstition, as love is to fear.

Locational geography was the ideal school work sixty years ago. To locate rivers and cities the world

over, reciting the location from memory, was the way to win preferment in the grades. To-day regional knowledge of geography appeals to thought rather than memory. Regional geography of to-day is to the locational geography of half a century ago as the automobile is to the ox-cart.

Quite recently the "Why" has come into prominence in geography; and still more recently the "Why" has become the pupil's "Why" instead of the book's "Why." Real thinking in elementary school geography is quite modern. Freedom to think in the elementary school is a new Democracy. Nowhere is it so easy and safe as in geography.

Learning geography is learning to acount for phenomena, for things as they are, for things as they have been and as they are to be.

Geography magnifies estimates as well as measurements. It is the first subject in the elementary school in which estimating receives special recognition.

The measurements of exact science are nowhere more magnificent than in mathematical geography. History is nowhere more reliable than in geographical records. Science is nowhere more exacting than in the transformation of the geography of inventions and industries. Civics nowhere offers a better opportunity for the estimate of action and reaction of human nature than in historical geography. Estimating lengths and heights, distances and areas, yields of crops and probable increase or slump in prices is highly important.

A machine can add, subtract, multiply and divide. No mathematician can make an *example* so complicated that some inventive genius cannot create a machine that will perform it, but no master of mathematics can make a *problem* so simple that it will not defy all inventive genius to solve it by some mechanical means. It takes slight brains to measure whatever is, but it takes a master mind to estimate results from causes; and in no school subject do physical and psychical causes play as vital a part as in geography, which is the elementary subject that challenges the keenest use of the best minds, that trains children to play the part of men.

Elementary geography reaches the height of influence when it attains personality, which is the aim of regional geography. The teacher must select some small neighborhood that has personality. In the country district it may be a group of farms that specialize in Herefords, Shorthorns or Jerseys; or in breeds of swine or poultry; in the raising of high grade grain or in fruit orchards, or garden vegetables. In a city, have the children think of some local condition that develops personality. It may be fenceless lawns, or apartments, or shade trees, boulevard, factory, department stores, or public buildings. There can always be found something in a neighborhood that has personality.

Enlarge the units of personality to the town or city; to some line of street cars or railroad, always looking for a larger unit of personality. The ultimate

aim of the New Geography is to have children think of everything studied with a view to giving it a personality in their thought. It is more than useless to have children learn many things about any city, county, State, or country. Whatever cumbers thought beyond things that function in personality becomes memory clutter.

Every master mind in geographic thinking has created a geographic personality for his time. Mathematical geography ruled and reigned in the school world for years, as did Physical Geography, Illustrative Geography, Descriptive Geography, Industrial Geography, and Commercial Geography. Now through Vitalized Geography and Regional Geography the personality of Geography has the center of the stage, and this is the cream of everything that has been in the evolution of geography for four thousand years.

A. E. WINSHIP.

The chief criterion of an advancing civilization is the degree of interdependence and mutual helpfulness of its members. The lowest society, that which is one or two removed from the jungle, is characterized by a crassly physical outworking of the law of survival. As man ascends, the law still holds inexorably, but its outworking is more and more spiritual. The value of the individual, his fitness to survive, is expressed in social terms, in terms of the service he is able to render to social life and growth. It is this idea which gives substance and force to the modern ideal of Democracy.

ROARK.

In studying geography we should look upon the world as almost a living thing, having an individuality of its own. We should think of it as a seed sown from the hand of God, filled with a germinant power of life, transforming and making the earth more and more worthy of the noblest inhabitants. The science of geography becomes, then, more than the knowledge of facts, relations more valuable than descriptions.

KING.

North America will rapidly accumulate a population equalling that of the rest of the world combined; a people one and indivisible, identical in manners, language, customs and impulses; preserving the same civilization, the same religion, imbued with the same opinions, and having the same political liberties.

GILPIN.

PREFACE

The aim of education is social efficiency,—good citizenship. No other elementary school subject contributes more toward this aim than geography. A good citizen must have a knowledge of his environment. Geography affords this knowledge.

The aim of this little book is to give the teacher and prospective teacher a knowledge of the pedagogical principles which underlie the teaching of geography, to inspire enthusiasm for the subject, and to make it more real, more social, more human.

The book is written with a full realization that there are many excellent treatises on the teaching of geography with which one can find little fault. However, a word of criticism may not be out of place. (1) Books on the subject of geography published ten years ago contain much that is valuable. Practically all of them, however, were written by advocates of "mind training," "formal discipline" and "faculty psychology." (2) Another class of books contains too much subject matter for the busy teacher to read. (3) Other books deal almost entirely with methods and "set" lessons. In preparing "Practical Methods for Teaching Elementary Geography" I have tried to avoid all this (1) by excluding many things discussed in other books; (2) by ignoring the "disciplinary" value of

geography; (3) by doing away with "cut and dried" methods. On the other hand I have included a number of things not found in any other book on the subject of Teaching Geography; for example; (1) The evolution of geography in the public schools; (2) Time Allotments; (3) General Methods; (4) The Psychology of Geography; (5) Special Methods; (6) Standard Tests; (7) An Outline Course of Study.

No one realizes more than the author the shortcomings and the defects of the book, but it goes forth with the hope that it may be of real service to those for whom it is designed.

In preparing the book I have borrowed freely, in order to emphasize important points, giving credit whenever possible. The course of study, chapter IX, is constructed from parts taken from several outlines.

I am especially indebted to the following persons: to Henry W. Holmes, Professor of Elementary Education, Harvard University, who read a greater part of the manuscript and who gave me many helpful suggestions; to Dr. Frank W. Ballou, Director of Tests and Measurements, Boston Public Schools, for permission to use a portion of his "Bulletin on Geography"; to E. E. Lackey, Professor of Geography, State Normal School, Wayne, Nebraska, for the permission to publish the Hahn-Lackey Geography Scale; to Superintendent Ernest Witham, of Southington, Connecticut, for permission to use his tests; to President E. L. Silver, State Normal School, Plymouth, New Hampshire, for his friendly criticism; to Dr. A. E.

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To the Macmillan Co., Publishers of
Monroe—Encyclopedia of Education
McMurry—Teaching by Projects
McMurry—Special Method in Geography
Holtz—Principles and Methods of Teaching Geography

To Scott-Foresman & Co., Publishers of
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To D. Appleton & Co., Publishers of
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To the A. S. Barnes Co., Publishers of
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Robbins—The School as a Social Institution

To Silver-Burdett Co., Publishers of
Pyle—Science of Human Nature

WILLIAM C. T. ADAMS

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PRACTICAL METHODS FOR TEACHING ELEMENTARY GEOGRAPHY

CHAPTER I

INTRODUCTION

Geography Defined.—Only a few years ago geography was defined as a description of the earth's surface on which we live. Geography at that time dealt almost entirely with a mass of facts, many of which were foreign to the pupil. These facts were of a descriptive nature, and had no bearing on the life of the pupil who was compelled to study the subject. The study of geography touched no sympathetic or responsive chord; it had no humanizing effect upon the life of the students Today, with its new meaning, it is not merely descriptive but interpretive, social and human.

When thinking of its infinite limits and breadth of scope, one finds geography hard to define; but by separating it into its various aspects, one may get a better idea of its content. For convenience we make the following divisions:

1. Descriptive
2. Regional
3. Physical
4. Mathematical
5. Commercial

Descriptive Geography. — Descriptive geography deals with land and water, as to size, form, and location. It is a description of the earth's surface, and is of little value when taught by itself.

Regional Geography.—Regional geography is not a new idea. A great many teachers have used the regional method for years. However, only recently has this method been emphasized. Professor Atwood says of the *regional method:* "It is the goal toward which the best scientific thought and the best pedagogy have been long progressing."

One cannot overestimate the value of the regional geography method where the pupil is to gain a clear and concise working knowledge of maps. It brings to the pupil new ideas, motivating geography study and forming a basis for the "socialized" recitation. The pupil by the use of this method will be the better able to take up project work, or to solve problems.

Pupils should be taught not only to read maps but to draw them according to natural regions and to give reasons for so drawing them. They should be able to answer readily such questions as, (1) What things affect climate? (2) What conditions determine rainfall? (3) Why is New England rough and rugged while Kansas and Nebraska are level?

Regional geography divides countries and continents into natural divisions or regions which are similar in climate, vegetation, natural products, etc. With the matter of social conditions, industries, etc., geographical conditions have much to do. Peoples of different

regions differ from each other on account of the regional conditions under which they live.

SUGGESTIONS FOR REGIONAL STUDY

I. Larger Regional Divisions
   1. Atlantic Coastal Plains
   2. Appalachian Highlands
   3. Great Central Plain
      (*a*) Northern part
      (*b*) Southern part
   4. The Western Plains
      (*a*) Northern part
      (*b*) Southern part
   5. Rocky Mountain Highland
   6. Great Basin
   7. Pacific Coastal Plains

   (*Note.—Each continent may be so treated.*)

II. Smaller Regional Divisions
   1. New England States
   2. Middle Atlantic States
   3. Central States
   4. South Eastern group
   5. Gulf States
   6. Ozark region, etc.

III. Special Divisions
   1. Alaska
      (*a*) Coast
      (*b*) Inland
   2. Places near the ocean
   3. Places where particular products are found

(*Note.—These topics are only suggestive, not exhaustive.*)

Physical Geography—Physical geography treats of the three layers of the earth's surface—land, sea, and air (lithosphere, hydrosphere, and atmosphere). Although physical geography is classified as a secondary study, many of its phases are treated in elementary geography.

One phase that deals with land formations is closely related to geology. The pupil learns the causes of mountains, valleys, volcanoes, etc. Another phase deals with rivers, lakes, seas, ocean currents, tides, and the effect of these agencies on climate, vegetation, and commerce. A third phase treats of the atmospheric conditions (meteorology), clouds, moisture, and precipitations (dew, frost, rain, hail, sleet, and snow). These phenomena are studied in their relation to man. The child should be taught to observe the physical changes that are going on about him, and how these changes benefit mankind; that rain is necessary to all life, vegetable and animal; that snow blankets the roots and seeds during the winter and protects them. There are many things to be taught which may be understood by the pupils, and be made of great profit to them.

Mathematical Geography.—Mathematical geography treats of the size, form, measurements, and movements of the earth. It deals with the relation of the earth to the solar system, with the elliptic, zones, latitude and longitude.

Commercial Geography. — Commercial geography treats of the nature and conditions of commerce as controlled by human agencies. It informs one of the

sources of food supply, the conditions under which the different products are procured, and how these products are distributed. This leads to the study of railroads and water ways. Commercial geography deals not only with foods but with materials used for building, for clothes, for medicines and for manufacturing purposes. It deals with agriculture, mining, fishing, and the various occupations.

Time Allotment.—No other subject in the elementary school curriculum is concerned with so many phases of human interest as geography, yet no other subject has been so neglected. The following table needs little comment. From the data given it is evident that one of the most important elementary subjects is not receiving the attention that it should.

Professor H. W. Holmes, in "Distribution of Subjects by Grades,"* found that less than seven per cent of the time in the elementary schools is allotted to geography, including nature study. The following table shows the number of minutes per week allotted to geography by grades.

One needs only to examine different courses of study to learn that there is very little uniformity of time allotment. The recitation periods in geography vary from seven to sixty minutes in length for the same grade in different schools. It is evident that geography should be given more attention. Added respect for the subject can be secured only by a fuller

*Fourteenth Year Book, National Society for the Study of Education.

Grade	*Cities*	*Average Allotment Minutes*
I	6	16
II	41	7
III	36	50
IV	49	83
V	50	102
VI	50	107
VII	50	98
VIII	34	76

appreciation of it. As no other subject yields such rich information about the world and its people, it certainly deserves more emphasis.

Geography Teaching.—"In the teaching of geography," says Geike, "as in instruction of every kind, a fundamental condition for success is that the teacher has so thoroughly mastered the subject himself that he can speak to his pupils about it, not in the set phrases of a class-book, but out of the fullness of his own knowledge, being quick to draw his most effective illustrations from the daily experiences of those to whom he addresses himself."

Probably three-fourths of the teachers follow text-books too closely in their teaching, introducing very little, if any, new matter. Home geography is too frequently neglected. Teachers lack initiative. They should be able to work out courses in local geography, for there is no more profitable work than the study of environment.

PRESENT NEEDS

1. More time given to geography in the elementary school.
2. More uniformity of courses of study and time allotments.
3. Better preparation of geography teachers.
4. Teachers who have initiative and who do not confine themselves too closely to the text-book.
5. More attention given to local geography.
6. More emphasis placed on the human phase of geography.

CHAPTER II

THE RELATION OF GEOGRAPHY TO OTHER SUBJECTS

Geography is closely related to many other subjects with which the teacher should be familiar. If the teacher has never studied these other subjects in a college or in a normal school, she should make their acquaintance if she is to teach properly. This, of course, does not mean that she should become a specialist in these subjects, but that she acquire knowledge sufficient to interpret geography in its relation to the other important subjects, in the light of evolution, and in reference to existing conditions.

In its broadest sense geography touches upon the fields of many sciences; such as geology, botany, zoology, physics, chemistry, and astronomy. Geography also bears a close relation to such subjects as nature study, history, arithmetic, and language. These subjects may in many instances be correlated with geography.

1. THE RELATION OF GEOGRAPHY TO SCIENCES

Geology.—Geology is an *earth science*. It deals with the historical, dynamical, and structural formations of the earth. Professor Dana says, "Geology

treats (1) of the earth's structure, and (2) of its system of development,—the latter including its progress in rocks, lands, seas, mountains; its progress in all its physical conditions, as heat, moisture; its progress in life, or its vegetable and animal tribes.

"Physiography begins where geology ends,—that is, with the adult or finished earth,—and treats (1) of the earth's final surface-arrangement as to its features, climates, magnetism, life, etc.; and (2) of its system of physical movements, or changes of atmosphere and ocean currents, and other secular variations in heat, moisture, magnetism, etc.

"Geography treats of the earth with reference to man; (1) the distribution of races or nations and all conditions bearing on the welfare of nations; and (2) the progressive changes of races and nations.

"The first of these departments considers the structure and growth of the earth; the second its finished state; the third, its fulfillment of its purpose in man."*

A teacher cannot fully comprehend geography unless she has a knowledge of geology. It is the foundation on which geography is built. It seems hardly possible for one to teach geography well who does not grasp the full meaning of dynamic geology. It is just as necessary for a teacher of geography to know geology as it is for a teacher of American history to have an acquaintance with ancient, mediaeval, and modern history.

* From "Dana's Manual of Geology." Copyright. By arrangement with American Book Company, publishers.

Botany.—Botany is the science of the earth's flora. Man depends on plants directly or indirectly for his food and clothing. The earth which produces these plants is man's home. Botanical geography deals with the distribution of plants over the surface of the earth. Plant ecology treats of soil, climate, friendly and destructive insects. In economic botany the plants which are useful to man are studied,—such as corn, wheat, rye, barley, sugar cane, fruits, grasses, etc. It is at once apparent that the relationship between botany and geography is close. Botany forms a large part of geography. It is essential that the teacher of nature study and elementary science have an acquaintance with botany.

Zoology.—Zoology is that part of biology which deals with animal life. Geography tells about the distribution of animals—wild and domesticated. Man is dependent upon animals for a large portion of his food and clothing. The great meat-packing industries must be supplied with cattle, hogs and sheep from the farms. Butter, cheese and eggs are staple foods. Another important industry is fishing. In geography one studies about these industries which could not exist without animals.

Physics.—Physics is a science of matter and energy; that is, laws, forces and gravitation. One learns about physical forces, as heat and cold, barometric changes, etc. When one studies these phenomena in geography, he is in the field of physics.

Chemistry.—Chemistry is the science that examines

the elements and their compounds experimentally and investigates the laws which regulate their combinations. It involves a study of the composition of air, water, soils, salt, sugar, the causes of fermentation, and decomposition, etc. One finds chemical change everywhere in nature. The study of geography, therefore, borders upon, and frequently invades, the field of chemistry.

Astronomy.—Astronomy is the science that treats of the heavenly bodies and their relation to the earth. Many facts taught in geography are taken from astronomy; for example, (1) the revolution of the earth around the sun and the change of seasons; (2) the rotation of the earth; (3) the inclination of the earth on its axis; (4) the laws of gravitation; (5) the light and heat of the sun; (6) the phases of the moon, with relation to tides and eclipses.

2. THE RELATION OF GEOGRAPHY TO OTHER SUBJECTS

The relation that geography bears to other subjects of the curriculum, especially those of the elementary school curriculum, has frequently been subject for discussion. Opinion has swung through the scale from the position held by such authorities as Colonel Francis Parker, who believed that geography underlies and is fundamental to the whole elementary school curriculum, to present-day thought which places geography in a position not superior to but in close

correlation with such subjects as nature study, history, arithmetic, and language.

Geography and Nature Study.—Some writers refer to nature study as the "correlating center" of geography. Certain it is that natural objects and phenomena supply geography with most of its materials. As has been pointed out in the preceding sections of this chapter, geography reaches out into many fields in its appropriation of materials and in its treatment of them.

In the lower grades close correlation should be made between geography and nature study in an elementary discussion of weather, soils, drainage, and local topographical features having a direct bearing upon such topics as food, clothing, and shelter.

In the upper grades the correlation should be still more close. Geography is now dealing with phases of elementary general science. Here the treatment merges into a discussion of the correlation of geography with the simpler processes of agriculture, the chemistry of soils, etc. The interrelated subjects should be given a regional treatment; that is, discussion should center around conditions as found in a certain region and comparison made with conditions obtaining in similar or nearly similar regions. As was brought out at the beginning of this chapter, adequate preparation upon the part of the teacher of geography demands that she be well informed upon all subjects which bear a direct relation to the study of geography.

Geography and History.—The relationship between geography and history is perhaps a closer one than that obtaining between geography and any other subject. History is a study of events in their relation to human progress, and as such it finds a thorough knowledge of geography well-nigh indispensable to a proper understanding of these events.

On the other hand, geography owes much to history. Professor McMurry says, "So completely is history everywhere environed and conditioned by geography that we are inclined to believe that if all the biographical stories and history studies of the children were treated with full regard to their geographic setting, children would have, without further study, a tolerably complete political and local geography. Many of the early history stories give a most graphic and realistic description of the topography and climate of the important parts of our own country and of other lands, oceans and hemispheres. So mutually helpful and illuminating is this light thrown upon each other's work by history and geography in several grades of our common school course, that we have laid out these studies on parallel lines. For example, the geography topics of the United States are paralleled by history topics for the same year, treating the same regions of country, and likewise with Europe and other lands to some extent." Many aspects of history can be interpreted intelligently only when there is a thorough understanding of the geographical background. Consider, for example, the part the Alps Mountains played in Hanni-

bal's campaigns, the protection the Pyrenees Mountains afforded France against the invasions of the Moors, the influence of the Appalachian Range upon the early development of our country, the causes of the marked differences in the industrial life of the northern and southern sections of the United States, etc.

Geographic conditions not infrequently control man's life. In nearly every case they exert at least a very potent influence. The political relations between nations demand a knowledge of history as well as geography for intelligent comprehension. A proper understanding of the boundary lines existing between nations calls for a knowledge of both history and geography. Consider, for example, the boundary between France and Germany, that between Canada and the United States, that between Chile and Argentina.

Geography and Arithmetic.—Teachers are beginning to realize that there is a closer companionship between geography and arithmetic than they once suspected. They have found that even in the lower grades the simplest topics and their discussion involve the constant use of arithmetical units, such as the dollar, pound, bushel, gallon, etc. In fact, if closer correlation were made in the assignment of lessons in both subjects, teaching would become more vital and resultful.

Standards of measure are constantly used in the discussion of such geographical topics as irrigation, mining, commerce, and, in the higher grades, the dis-

cussion of latitude and longitude, the length of the day, month, year, distances from the earth to the planets and other heavenly bodies.

Geography and Language.—The correlation between geography and language is close and constant. Why is it then that so much of the written work of the geography lesson is so poorly done? Classwork of the geography period should be as well done as that demanded in the composition lesson. To permit anything short of this is to miss a valuable opportunity for purposeful correlation. Geography does much for the composition lesson in that it provides many interesting topics upon which no pupil should ever find it difficult to write.

CHAPTER III

MODERN GEOGRAPHY

THE HISTORY OF GEOGRAPHY

Geography, as we think of it, is a comparatively modern subject. Geographical history is divided into three epochs of unequal length. The beginnings of geography are not recorded, for geography is older than history. Most of the ancients had some idea of geography. The Phoenicians were navigators. Homeric poems contain traditional geography. Navigation was, however, confined chiefly to the Mediterranean Sea.

The first period may be said to date from Herodotus, 444 B. C., who was the first geographer of the Greeks. But his knowledge was meager. He divided the world into the known and the unknown.

The discovery of America by Columbus, in 1492, was the beginning of the second period. Explorations and discoveries followed, but knowledge of facts was limited.

The third period dates from the time of Livingstone, Stanley, Grant, and others who made explorations in unknown continents and gave to the world the information they secured. This was in the nineteenth century.

Commerce grew, and with the invention of steamships the world grew smaller.

During the latter part of the nineteenth century men actuated by commercial motives began to make explorations. These explorations continued until the world was completely mapped. Modern geography had its beginning during this period of discovery and commercial expansion.

In about the year 1600 geography was introduced into the elementary schools of Germany. Some textbooks were written for German schools. The change from humanism to realism changed the course of study in a limited way, or, it might be said, the course was enriched by the introduction of nature study or science. Commenius had written his famous "Orbis Pictus," which gave considerable attention to nature study and geography (1630-1670).

The next great realist to make much of geography was Rousseau. Each of the "Innovators" in turn gave geography special attention; and in the early part of the eighteenth century, through the influence of Franck, it took its place in the school curriculum as a distinct subject.

Carl Ritter* is called the father of modern geography. He would not have it taught as isolated facts, but, realizing the relation between nature and man, he proceeded to vitalize and enrich the study of geography. Unorganized and disconnected facts were brought together in such a way as to show the rela-

*See "International Encyclopedia" Vol X.

tionship between the world and mankind. Ritter advocated the study of home geography, the study of one's environment. His teaching included map-drawing. Baron von Humboldt, a contemporary of Carl Ritter, laid great stress on physical geography, making a study of altitudes and inventing isotherms and profiles.

The European nations stand at the head of the list in geographical progress, especially France and England. America only recently has awakened to the European conception of geography.

THE STUDY OF GEOGRAPHY IN THE UNITED STATES

Princeton University was the first to recognize geography as a college subject, calling Guyot to teach the subject in that institution in 1847. Harvard required geography for admission in 1816, but it was not until 1827 that it was required in the elementary schools of Massachusetts. Jacob Willet's "New Improved Geography"* was the text in common use. Willet said in the introduction, "It has not been deemed expedient to sprinkle this book with pictures, from the conviction that they serve to divert the attention of the pupil, rather than inform his mind, or improve his tastes." Thus it will be seen that the teaching of geography is once again modeled upon the catechetical style. Holtz says, "Geography at this time was little more than a catechism and remained so until about 1860."

*Holtz, "Teaching Geography," p. 330.

In 1844, Sydney Morse (of New York), "Father of American Geography," published "A System of Geography." The book was more logical and sensible than former ones, and contained map-studies. The book was large and the maps of atlas size. The maps were the first made by lithographic process in colors, but they were poorly printed. Modern geographies are the outcome of this effort.

When Guyot came from Switzerland to lecture in Princeton University there began a rejuvenation of geography teaching. Guyot, who was a disciple of Carl Ritter, had adopted Pestalozzi's methods. He put life into the subject. With Mrs. Mary Howe Smith of Oswego Normal School, he wrote a series of three graded geographies.

Then followed series of geographies by Colton, Harper and Swinton. These geographies had better maps and better pictures. Commercial geography was introduced.

The next period was represented by Redway, Hinman and Frye. These geographies were beautifully illustrated and the maps well executed. Wood-cuts gave way to photographic processes. The physical element was stressed.

Since 1900 the human element has received emphasis. Geographies written by King and Dodge, and later those by Tarr and McMurry, are of this period. Human life, the occupations of men, and physical environment find a place in the most modern geographies,—such as those by Niver and by Frye and

Atwood. These later series preserve the typographical excellence of their immediate predecessors and at the same time make a special feature of regional geography.

CHAPTER IV

AIMS AND VALUES

Geography has a threefold value; namely, from the point of view of culture, utility, and social efficiency. In setting forth the aims of geography study, we shall begin by quoting Professor Geike, who says: "The elevation of geography to the place which it ought to hold in the school curriculum appears to me to be a matter of vital moment; first, from the value of the subject as a branch of knowledge; and, secondly, because it offers a cure for what I conceive to be a radical defect in our educational method, namely, the want of any effective discipline in the habits of observation. It may be begun on the very threshold of school life, and it may be pursued in ever-increasing fullness of detail and breadth of view up to that time. No subject can be compared for a moment with geography in this respect. It serves as a common ground on which the study of literature, history and science may be reconciled."

James Bryce* would make geography the foundation or starting-point of human studies, as history, literature, economics, sociology, etc., as well as a source

*"The Journal of Geography," April, 1902. Note—These excerpts are used for the purpose of criticism.

of practical training in observation and reflection. The pleasure of travel is increased if one is a student of geography.

R. E. Dodge says the study of geography results in:*

1. "Knowledge—understanding of geographical conditions."
2. "Power—ability to think clearly and accurately."
3. "Independence—study of inter-relations of peoples and individuals, and independence of all."
4. "Citizenship—ability to combat successfully with one's social and physical environment."

Geography should be taught—

1. "For the mental discipline it affords."
2. "For the knowledge it contains."
3. "For its value in connection with commerce and industries."
4. "For the basis it affords in the study of other subjects" (as above enumerated).
5. "For its refining and cultural influence."

Geography has a psychological value.

1. "It trains the powers of observation and perception." Instead of starting with maps and books the children should begin with observation lessons.
2. In his tracing lessons the child's imagination is called into play. Its office in this connection is to build correct images of the unseen by using what is known.
3. Dr. Harris says, "What educative value there is in geology, meteorology, zoology, ethnology, economics, history and politics is to be found in the more profound study of geography, and, to a proportionate extent, in the study of its merest elements."

*"The Teachers College Record."

It is at once apparent that some of the aims quoted are those of the old school; that the authors believe in formal discipline and general mind-training. Such expressions as "training of the faculties," "effective discipline," "habits of observation," "practical observation and reflection," "geography should be taught for the mental discipline it affords," etc., are proof of this.

The teacher of geography should be able to criticise such statements as those mentioned above. She should know that faculty psychology went down before the onslaughts of Herbart, and that modern educators no longer believe in formal discipline.

A pupil studies to acquire knowledge not for what it will do for him, but for what he can do with it. Knowledge is for use. Training is specific and not general. Training in geography makes one efficient in geography, but not in other subjects.

A botanist is trained to observe flowers and plants, but he may scarcely notice the rocks or soils. There is no faculty of observation, but many observations.

The aim of education is social efficiency. Geography is a social subject. Before one can be socially efficient one must know something of the world in which he lives; something more of his own State, and still more of his own community. Geography gives him this knowledge more than any other subject.

"Education is the process by which the individual continues the pre-school activity of getting experience and working it over by reflection into terms of social

utility. It is a process that he does not begin in school and cannot end when he leaves school. It is essentially the life process and the work of life. Plato was right, therefore, when he spoke of education as a life work. Experience must continue to function in the getting of new experience, and old experience must be reinterpreted to meet new experience. The process of learning must be kept up; without that, even capitalized facts and methods of handling them, which we have thus far succeeded in accumulating, will slip away, for one cannot acquire any form of skill and discontinue it without in large measure losing it."*

Geography is a life interest. Its usefulness keeps it prominently before us. Its social value is apparent for it fits into our life work.

"In our study of geography it is particularly plain that each of us is engaged in building a world-image. The notion that we must for the sake of comprehension begin with the familiar experiences of home geography verifies that statement of our process."* What kind of a world-image we build will depend upon our mental material. Geography furnishes the material, and the more accurate the geographical knowledge we possess, the better the world we shall build. It is said that one gets out of a thing just what one puts into it. One's social efficiency will depend upon what one knows about the "great, wide, beautiful, wonderful world" in which one lives. Geography stands ready

*From E. C. Moore's "What Is Education?"

to supply this knowledge. The teacher has an important duty to perform in selecting at the right time the right materials out of which the pupil is to build his world.

AIMS OF GEOGRAPHY TEACHING

In organizing a reasonably adequate test one must consider the aims or purposes of teaching the subjects to the groups tested. In order that the reader may gain a clearer understanding of the choice of questions and of the interpretation of the results, a brief statement is given of some of the more important aims of geography.

As is well known, the conception of geography teaching today is quite different from that of fifty or even twenty-five years ago. Then the subject consisted largely of memorizing definitions, in learning the locations of places, and in learning unrelated facts about the different countries of the world.

At the present time we consider that the value of geography lies not so much in the knowledge of the facts concerning the earth and its people as in the understanding of the various ways in which man's activities are influenced by physical environment.

As a result of the study of geography in the elementary school the pupil should gain:

1. A lasting interest in the various peoples of the world, their industries, and their relations to ourselves. Every people and every nation contribute to our welfare.

2. A mastery of geographic facts and principles sufficient to enable him to explain such facts as:
   (*a*) The growth of the leading cities. Why they are located as they are, etc.
   (*b*) The development of important industries, and reasons for their distribution.
   (*c*) The dependence of one part of the world upon another.
3. A broad-minded and a sympathetic attitude which should lead him to an understanding of races and nations other than his own.
4. A knowledge of the use of texts, maps, and reference books so that he can work out new problems independently.

In short, geography should help the pupil to interpret his environment, which in the case of civilized man reaches out to all parts of the world.

Cultural Value.—Francis Wayland Parker says, "The study of geography, elementary and scientific, cultivates, systematically, the faculty of imagination, and the products of this faculty arouse at every step, emotions of beauty that culminate in and develop the emotion of grandeur."* Professor Parker speaks of the faculty of imagination. Imagination is a mental process but not an entity of the mind.

One's enjoyment of nature is enhanced by his knowledge of geography. Here he studies the natural elements, forces of nature, and beauty of scenery, both in excursions and in extended trips. A good rule to

*"How to Study Geography," p. 20.

follow, and one that I personally recommend, is that of making a careful study of the places one expects to visit.

The study of geography broadens one's view of the world, making him acquainted with his fellow men. It is a substitute for travel; in fact, one travels in his imagination from country to country; he tries to see people as they are in their far-off home.

"The mentally pictured hill is 'a thing of beauty,' which, in time, towers up into the lofty mountain. The lake is the inception of a picture of 'old ocean's solitary waste.' For what pleasure is it," says Watson, "in an hour to behold those realms, cities, seas, rivers and mountains that scarcely in an old man's life can be journeyed and pursued. What credible delight is taken in beholding the diversities of people, beasts, fowls, fishes, trees, fruits and herbs; to know the sundry manners and conditions of people and the varieties of their natures, and that in a warm study or parlor, without the peril of the sea, a danger of long and painful journeys, I cannot tell what more pleasure should happen to a gentle wit than to behold in his own home everything therewith in all the world is contained."

No other subject in the curriculum can claim for itself so wide a field of thought and investigation. King says, "General intelligence is travel and reading. Geography is a necessary auxiliary of both." Thousands of people travel for pleasure as well as business where ten traveled fifty years ago. The

automobile is doing a great work in making people acquainted with their environment. The city people go to the country and country people to the city. Class barriers are being broken down. The traveller needs to have a good working knowledge of geography. The study of geography should include the study of humanity.

"When pupils leave the grammar school they should have acquired, in addition to a knowledge of the central facts of geography, the ability to compare one country, one zone, one river with another; to classify and arrange additional facts; and, above all, they should have acquired a taste for good reading, a love for travel, some knowledge of the best books of travel, and of the world's wonder and beauties; in short, what we may call geographical culture."*

Utilitarian Value.—Geography is defined as "a description of the earth as the home of man." Countries, lands, people, climate, mountains, plants and animals are studied to give the pupils a better knowledge of this "home." "Geography is the open door to all sciences." People depend upon the agriculturist for their food supply. Agriculture has its foundation in geographical knowledge—soil, distribution of plants and animals, latitude, rainfall, etc.

The pupil should be taught reasons as well as facts. We are living in a commercial age. Therefore the child needs to know the reason for the rapid growth of Chicago, New York, etc., why cities are located at

*King, "Methods and Aids in Geography," p. 30.

the junction of large rivers, at the head of lakes, on good harbors, etc.

Valuable as such knowledge is, it is of little account if not used. It should form a basis for the pupil's daily study, to interpret history and literature, to understand better our economic and social problems; and, should he continue his study in higher schools, it should form a basis for further scientific study. Just as higher mathematics requires a knowledge of arithmetic, so the so-called natural sciences require a knowledge of geography. Dr. Wm. T. Harris says, "Geography unites the study of the natural elements, land and water, climate and productions, with man's present conquest and use of the same."

Professor McMurry in his "Special Methods in Geography," says, "Geography is the study of the earth as the home of man." This definition gives the key to geographical study, as distinguished from other studies and as related to them. The study of the earth alone, its phenomena and forces, its vegetation and its animals, its rocks and atmosphere, is natural science pure and simple. The study of man in his work and progress, his struggles and representative deeds, is history. The study of the earth as related to man is geography. Every topic in geography has a twofold basis,—in natural science and in history. It has two faces—one toward nature and the other toward man.

Place relations are taught in geography. These relations have their beginning in home geography.

Geography is of great value to the merchant. He knows whence his goods come, and the routes by which they are shipped. This leads him to study waterways and railroads, that he may secure his wares by the shortest and cheapest routes. The knowledge of places and of the means of transportation is useful also to the manufacturer. Modern commercial life needs all the geographical information possible concerning raw materials.

SOCIAL EFFICIENCY

Another aim of the teaching of geography is to make the individual a useful citizen,—to train him for social efficiency. Not only must the good citizen support himself, but he must contribute something toward the welfare of others. In a civilized world man must depend upon his fellows. The child is taught that he cannot do without other people; that one nation is largely dependent upon other nations. No other subject will teach the child his dependence upon others and his duty toward others as does geography.

The child should be made to see that he owes a great debt to civilization. Paul said that "We are debtors both to the Jew and the Gentile." The poet has said, "We are heirs of all the ages in the foremost ranks of time." Being debtors and heirs, we must meet our obligations by contributing to civilization, by helping to make the world a better place in which to live. Social welfare must be placed ahead of individual indulgence. The teacher must be able so to direct the

work that it will contribute toward this aim. The child who is properly taught will be patriotic and proud of his country. He will love his own state and be loyal to his community, yet will still have a wholesome respect for other countries and other communities.

CHAPTER V

THE PSYCHOLOGY AND PEDAGOGY OF TEACHING

GENERAL METHODS—APPLIED PSYCHOLOGY

Preparation of the Teacher.—The time is not far distant when a normal school or college education will be required of all teachers. They will then be specialists in the subjects which they teach. They will not only be specialists, but they will have a knowledge of the pedagogical principles which underlie the teaching and learning processes.

At one time it was deemed sufficient if the teacher knew the subject she taught. This view is still far too prevalent; but it is a pernicious belief, because the teacher who desires the best results must know not only her subject but the child whom she teaches. She must also know the processes by which the child acquires knowledge.

The Control of Instincts.—The teacher should be tactful and wise in her teaching, else she will fail to reach the desired aim. For example, the teacher learns that some of the boys are robbing birds' nests. She reprimands them, telling them that such a practice is wrong. Negative teaching of this type does very little

good. On the other hand, if she will only interest these boys in building bird-houses and will show them how useful birds are to man, her teaching will accomplish far greater results. The teacher may tell her pupils that scientists inform us that each bird destroys on an average, a bushel of worms, slugs, beetles, larvae and harmful insects. If there are 10,000,000 birds in the State this means that many bushels of harmful insects are destroyed and millions of bushels of fruit and grain are saved.

Take another illustration. The teacher observes that the boys are killing bumble-bees. Let her give a few lessons on the fertilization of plants. Let her show the pupils how the bees fertilize the pumpkin blossoms and the clover bloom. She might then ask how many of her class like pumpkin pies. Without bees there would be no pumpkins and no clover. The cows that give us milk must have clover. Without pumpkins and milk there can be no pumpkin pie.

In this way the teacher gets the results she desires. In order to teach a moral lesson, and at the same time to make geography real, concrete and human, she has appealed to the strongest instinct of the child; *viz.*, that of self-preservation.

THE VALUE OF INSTINCTS IN TEACHING GEOGRAPHY

In every child there are inborn tendencies to act. These tendencies do not all appear at once; they come and go. The earlier ones disappear and new ones appear at different periods in the child's

life. The teacher who knows something of the value of instincts in education will seize upon them in her teaching. She must know what children are by nature if she wishes to do her best. Some instincts should be inhibited, some modified, and others encouraged. No other subject possesses so rich a field for encouraging the useful instincts as geography.

There are two very strong instincts or natural tendencies. The first is individual, or that of self-preservation, the second is sex, or parental, which is the foundation of the family and the home. Various subdivisions are the individualistic, socialistic, and adaptive instincts. These can all be utilized in teaching geography.

Then, too, there are the many phases of instinct, as curiosity, collecting, imitation, etc., of which advantage may be taken. By a study of the pupil's physical traits or instincts the teacher knows the child. She must also know the mental processes by which the child gains knowledge. These will be treated later.

Allied with the individualistic instinct is the social phase,—sometimes called the social instinct. Man by nature is social. If he is isolated his savage tendencies appear. In a civilized nation there must be social intercourse among men. Geography deals with many social factors, such as governments, institutions, commercial relations, etc.

The gregarious instinct which brings boys together in gangs and cliques, usually to the detriment of those

concerned, must be brought under control. This instinct should be utilized by the teacher to form corn clubs, pig clubs, garden clubs, debating clubs, etc.

As stated above, the aim of education is toward social efficiency. The individualistic instinct must be directed so that the social instinct predominates. The pupil must learn that others have equal rights with himself. These rights he must respect. He learns to be not a parasite but a producer and a contributor to the welfare of others.

Referring again to native tendencies, one finds that man has an adaptive instinct. He must adapt himself to his environment or he cannot survive. After he has learned something of his environment by a study of geography, something of the evolution of society from savagery through barbarism to civilization, and something of the social and economic conditions which have brought about these changes, man will be better able to adjust himself to his environment. It is necessary for the teacher to know something of evolution—that struggle which the race has passed through in order to reach the present vantage ground.

The collecting instinct is of great importance to the teacher. All children possess this instinct to a greater or less degree. They pick up nearly everything that attracts their attention. This collecting instinct, crude in the early years, is carried on systematically in later childhood and youth. When this trait is dominant, it is well to encourage the collection of speci-

mens of flowers, rocks, grains, insects, pictures, and postage stamps. A museum may be started which will add interest to the school life. A room showing the different industries may be set apart in the school. Community interests should be here represented. Exhibits may also be made at county fairs.

Curiosity is another human trait which is very prominent in childhood. The child is curious about everything. He asks questions about what he does not understand; where things come from; how they are made; what makes plants grow; what makes it rain; what is frost; and many other such questions. Questions so vary with the child's age that the time to teach him about a thing is during the particular period when he is most interested in it. The teacher should do her best to satisfy the child's curiosity. Elusive answers will not suffice.

Imitation is another tendency which is of importance in the study of geography. The child imitates others,—unconsciously at first, later consciously. He wants to dress and act like others. Imitation is also a great socializing factor. Language is learned by imitation. As play is imitative, it is also a socializing factor. The child plays that he is engaged in occupations and industries, and if his play is properly directed he will learn many useful things. Many of the project plans in education are little more than directed play.

Symbolism.—In the study of any subject, one must be familiar with the symbolism of that subject, if he is to understand it. Too much of the present-day

teaching consists of little else than blind symbolism,—committing to memory much that is not understood. There is too much formalism and too little comprehension in a great deal of school work. There is also too much traditionalism in the teaching profession. Teachers are too prone to do things as they always have done them.

Professor Keith says, "Geography was, for a long time, taught from the form side; that is, the child learned definitions of geographical concepts by committing them to memory rather than by building them up for himself on the basis of experience or on the basis of memory and imagination. He studied maps and map questions without first making surface features and regions well known to him. He was supposed to learn industries, commerce, and government by learning words from a book. All this is happily changed. There is a symbolic phase of geography, and this symbolism can have validity only as the child by a process of sheer association regards it as symbolizing his already appreciated mental contents. Hence, home geography and its symbolism are studied first; then by industrial and commercial connections, the study widens to foreign regions, to regions more remote, the earth as a whole."*

The simple should be studied before the complex. The old idea of studying about the world before home geography was not good pedagogy. Simple devices,

*Keith's "Elementary Education," p. 93, Scott, Foresman & Company, publishers.

simple machinery, simple forms of society, simple industries, should form the foundations for the more difficult and complex. The concrete should be taught before the abstract. A child has not advanced far enough to be able to carry abstract relations in his mind. His knowledge comes through the senses. He must be able to see, hear, feel, taste or smell a thing in order to comprehend it. If the teacher does not have access to the thing she is teaching, she should have a model, picture or map of it. The child should then be made through these objects to see the real thing in his "mind's eye." He learns by experience, and as his experience broadens he may be introduced to the abstract.

Steps in the Teaching Process.—In the teaching of geography, as in other subjects, there are certain formal steps to which the teacher should adhere, namely:

1. Preparation
2. Presentation
3. Comparison
4. Generalization
5. Application

1. *Preparation.*—The first step is to bring the pupil into relation with his lesson, to establish a point of contact. This may be done by way of illustration. The illustration should be appropriate and contain a point similar to the one in the lesson.

2. *Presentation.*—New material should be intro-

duced. The facts of the lesson should be referred back to those presented in previous lessons. The use of maps and pictures is very valuable in this connection.

3. *Comparison.*—Here the new facts must be compared with those already known. Points of similarity and contrast should be brought out; for example, the comparison of a hill with a mountain. In what respects are they similar? How unlike? Comparison of one State with another may be made. It is well to have the pupil compare his State with others, as to *a.* size, *b,* shape, *c.* surface, *d.* climate, *e.* products, *f.* people, *g.* industries, etc.

4. *Generalization.*—After various phases of the situation are studied and general principles secured, we are ready to formulate a statement of the general results of our comparison.

5. *Application.*—The knowledge acquired must be used. Knowledge is of value only as there is use for it.

Professor McMurry says, "Those steps may be fairly illustrated in the general outline by an analogy taken from the work of a farmer. 1. The soil is plowed, harrowed, made ready for seed. 2. The grain is sowed upon the soil and raked in. 3. The growing grain is cultivated and the weeds destroyed. 4. The harvest is brought in. 5. The grain is used for the practical purposes of food."

The analogy is so complete that it hardly calls for commentary. The preparation is the act of prepar-

ing the soil of the mind for the seed corn of instruction. The presentation is the sowing of the seed upon the prepared soil of the mind. The third stage is the cultivation of the growing crop, the working over and over of the knowledge just acquired by means of comparison. The fourth is the harvest time, the drawing out of the general truth involved in the lesson. Finally, the particular use to which the harvest grain is put is the application of acquired knowledge to the practical experiences of life.

The following quotation is an appropriate one with which to close this chapter. "The teacher should lead or guide his pupils through the garden of knowledge, and show them which kinds of fruit are beneficial and which are injurious. He should also show them the best means of obtaining the fruit but he should not pluck it for them. He should teach his pupils to think; he should not do their thinking for them."*

*"Mistakes in Teaching," Hughes, p. 92. Used by permission of A. S. Barnes Company, Publishers.

CHAPTER VI

SPECIAL METHODS IN TEACHING ELEMENTARY GEOGRAPHY

Elementary Geography.—The teaching of elementary geography is now and always has been more or less determined by the text-books in use. Geographies during the early part of the last century were arranged topically. The plan of the geography was to cover briefly the whole world. During the next period two geographies were used in schools, the elementary and the advanced, which were very much alike in content, except that the treatment found in the advanced geography was more thorough. Stress was laid on the commercial and physical phases of the subject. Relationships were almost or wholly disregarded; and for this reason the pupil's knowledge was scrappy and disconnected. Today the life side or human element of geography is stressed. Any subject that does not present a human aspect is not worthy of study. "That the so-called 'human side' of geography is of prime importance and chief interest in the subject is readily admitted, but that 'geography is a study of the earth as the home of man' and nothing more, is neither comprehensive nor scientific. Geography is highly

complex, and the danger here, as in other fields of study, is that undue emphasis and recognition shall be given to some particular phase."*

Mr. Sutherland says that "man is not the only inhabitant of the earth; that there are many creatures, and man is only one of them." Man, too, must battle with his environment, survive or die as the other creatures about him do. However, he has the advantage over other creatures because of his intelligence. Animals are ruled and guided by instinct almost entirely, while man possesses both instinct and intelligence.

"The attainment of the social point of view in the selection and treatment of the materials of geography and the natural sciences has been a matter of very great difficulty. In the first place, the modern schools have been infected with much of the medieval attitude toward science; there has been a great deal of naive interest in the curious and extraordinary. In the second place, a great deal of Pestalozzian influence, which was important in securing for geography and the natural sciences a place in the curriculum of the elementary school, was along the line of selecting such material as would be useful in providing the means of that training of the senses and development of the powers which Pestalozzi made preëminent in his theory. The object lesson which he devised, and which was the embryo out of which developed much of the early

*Sutherland, "The Teaching of Geography," p. 96, Scott, Foresman & Company, Publishers.

science teaching in the elementary school, was designed to give training to the senses rather than to emphasize a social point of view in the treatment of the diverse materials of the world. It should be said, however, that the development of geography through the Pestalozzian influence brought out the idea of treating the whole of that subject from the point of view of the earth as the home of Man.

"Another obstacle in the development of the social point of view has been the widespread influence of the disciplinary conception of education. Where the purpose of science teaching is merely to develop the memory, to give training in discrimination, to expand the logical faculty, there has been little opportunity to place emphasis upon the social value of the subject matter.

"Even the influence of Froebel, much as he did to emphasize social ideas in education, tended to bring out the poetical and the symbolical in science rather than the every-day facts that are of significance to human beings in a literal sense. In spite of this, however, the social phase of his philosophy is coming to obscure the symbolic, and the physical interpretation of Man and Nature is giving way to a human, that is, a social treatment of both, not altogether out of accord with the Doctrine of Unity when it is stripped of its symbolic implications."*

The social interpretation has done much to modify

*Dr. Robbins, "The School as a Social Institution," pp. 369-370, published by Allyn & Bacon.

the teaching of geography. "The peculiar effect of the application of the social type of interpretation is well illustrated in the development of the material used in teaching geography. The very term 'geography' 'description of the earth,' seems to offer a temptation to cling closely to the physical or surface features; but with the development of the idea that the treatment of geographical material should emphasize the view that this study concerns the earth as the home of Man, there has been a revolution in the arrangement and treatment of materials. It is still true that there is a certain type of mind that is satisfied when it has found the location of a place on the map; and much of the teaching of geography is still apparently based upon the assumption that when location has been mastered there is nothing to be done. Nevertheless the influence of such men as Guyot, Colonel Parker, Frye, Redway, and McMurry, and later Niver and Atwood, has done much to emphasize the belief that the really important part of geography lies beyond the mere surface of the earth, that human relationships are the ones of greatest significance."*

SPECIAL METHODS IN GEOGRAPHY

There are several methods used in teaching geography, of which the following are in most frequent use:

1. The Observational Method.
2. The Journey Method.
3. The Type Method.
4. The Map-Drawing Method.
5. The Topic Method.
6. The Project Method.

*Ibidem.

Modern education requires that everything be made real and vital to the child. Nowhere is there greater need of this correctness of teaching than in geography. The known must be studied before the unknown, the concrete before the abstract, the simple before the complex. Therefore children should begin their geography study with nature lessons, home geography, and concrete experiences of every-day life, in order gradually to broaden their horizon. The old idea was to begin with the world and gradually work toward home. Modern methods reverse the plan by beginning at home and gradually broadening the scope.

1. THE OBSERVATIONAL METHOD

Observational methods should always be used in the lower grades, and will be found profitable in all grades. One may choose to call this home geography. It is best studied by little excursions to places of real interest upon the part of teacher and pupils. A discussion should always follow one of these excursions. They should always be planned with a definite aim in view. Factories and shops, stores and markets, parks and public buildings should be visited to get an insight into the real as it is found in these places. Houses in the process of construction should be visited, that the children may form some idea of how a building is constructed. They then see the materials —lumber, shingles, cement, brick, stone, nails, etc. Where do the materials come from? How are they prepared? This leads to the question of trees, saw-

mills, and planing mills. In the same way quarries, kilns, and foundries are brought into the discussions. These are only suggestive. Such fields are rich in materials.

Take, for example, a visit to a fruit-stand. Children are interested in fruit. How many kinds are there? Where does each grow? How does it grow? How do we get it? etc. As an illustration, take bananas. Where and how do they grow? How are they shipped? The way is now open for a store of information. Most children think of bananas as growing with the pods hanging down as they see them in the fruit store. The children will learn that they grow the opposite way. They will learn why they are shipped green; that bananas allowed to ripen on the plant would be as dry and tough as the pith of the cornstalk. Climate, refrigerator cars, people in other lands, transportation, etc., will be introduced. Each kind of fruit may be studied, for the pupils are eager to learn. They will observe more carefully each time they pass the fruit-stands. They will be on the lookout for new kinds of fruit. The study of geography will have a new interest to children if this method is followed.

In the upper grades visits should be made to the court house, municipal buildings, etc., but in the earlier grades "children are not old enough to appreciate the subject of local government in its official aspects. There is, however, a side which appeals; and through this the rudiments of civics may be presented. The administrative side interests the pupils. The police-

man on his post, the fire-house around the corner, the street-cleaner, the ashman, the postman, etc., means more to the child than the mayor and the city officers. These come more in the child's life, and the work of public servants may teach pupils respect for law and order and simple duties as little citizens. The heroic element in the lives of these men should be shown, for hero-worship in the child will respond to it."*

Each locality possesses places of interest. Some of them are historic spots. Events have taken place there that made them historic. These examples may seem more closely related to the study of history and civics than geography, but as geography deals with relationships, history and geography may be correlated. Both history and geography concern man and the way in which he lives.

Creeks, lakes, rivers, woods, parks, fields, and many similar places may be visited but always with a definite aim. Observation, if adapted to the ages of the pupils, will increase interest in geography and nature study, in all grades. The world is rich for him who has been taught to see and hear and use nature's gifts to him.†

The writer once had a botany teacher, a bright young man, who complained of the lack of specimens. He had come fresh from the university where materials were prepared for him. In a short walk

*Holtz, "Principles and Methods of Teaching Geography." Used by permission of The Macmillan Co.

†A good article on "Observation" is found in John Adams' "Herbartian Psychology Applied to Education."

about the campus, we counted twenty or more kinds of trees, thirty different kinds of plants, twenty-three kinds of noxious weeds, various kinds of grasses, etc. We went to where a little creek ran into a larger one. Here we found watercress, and several kinds of fresh water algae. Here were materials for years of study right before the teacher, but he had not learned to observe. Soon his laboratory was a veritable herbarium.

Professor O'Shea, of Wisconsin University, says: "Educators ought to provide more opportunity for pupils to come in contact with more concrete things through the senses." Nothing is more valuable than direct contact with nature. Children love nature and are interested in outdoor life. Our ancestors lived out-of-doors, and the child is their descendant. Professor Pyle says, "Teachers and parents should foster these manipulative tendencies and use them for the child's good. These tendencies are an aspect of curiosity. We want to know. We are unhappy as long as there is a thing before us which we do not understand, which has some mystery about it. Nature has developed these tendencies in us, for without a knowledge of our surroundings we could not live. The child, therefore, has in his nature the basis of his education. We have but to know his nature and wisely use and manipulate it to achieve the child's education."*

First, there is the migratory instinct, the *wanderlust,* which is a natural tendency found in all pupils

*"Science of Human Nature," by Pyle. Published by Silver, Burdett & Co.

to a greater or less degree. Children desire freedom, and prefer the fields and woods to the schoolroom. Most everyone of us at sometime in life played truant, or ran away from home, or wanted to. These inherited tendencies are certain to develop. They must not be inhibited but must be modified. This can be accomplished by participation in "hikes" and excursions. The natural bent of the child is followed in these explorations and his interest in out-of-doors life is manifest. His instinct of curiosity will help him to learn about the things in which he is interested. Another instinct—the social or "gang" instinct—will naturally tend to bring pupils together for these excursions.

The collecting tendency can be utilized on an observation trip, and the specimens,—shell, rocks, flowers, insects, etc.,—may be used in later lessons. When the teacher plans an excursion for a definite purpose, this should form the basis of lessons of the trip. The collections are only incidental.

The most valuable information is gained by being brought into contact with the thing studied. Nothing can take the place of first-hand information. The excursion puts the pupils in touch with the real and the concrete. In planning excursions the teacher must have an aim and a definite end in view. For example, if the class is studying the subject of *drainage,* the sloping land, hillside or mountainside furnish types.

The following facts are observed, studied and discussed:

1. Incline—gentle, steep, abrupt, precipitous.
2. Direction of slopes.
3. Erosion—causing ditches, ravines, valleys, bared rocks, soil carried away, flood plains, soil formation.
4. Brooks, creeks, rivers—size, source, banks, beds, direction, river systems. Use—water power for mills, factories; to furnish electricity; water routes.
5. Observation of rapids, falls, pools, etc., as types.
6. Watersheds, valleys, plains.
7. Canals, harbors, navigation, kinds of vessels.
8. Rainfall, crops, trees, vegetation.
9. Are rivers straighter in level or hilly country? Why?
10. Why are large cities located on harbors and large rivers?

Such an outline cannot be exhausted in a single trip, but it will furnish a basis for many lessons. The environment of the school will determine such modifications as are necessary in each locality. It is only suggestive, but it shows how such excursions may be utilized to motivate geography teaching. The teacher should require pupils to give reports of these trips. In the upper grades the reports should be written, that they may serve as topics for language lessons.

SUGGESTED TOPICS FOR OBSERVATION

1. Name some wild and domesticated animals you have seen. Of what use are they?
2. Make a list of vegetables raised in the garden.
3. Make a list of trees, flowers, shrubs, etc., found in your neighborhood.
4. What do we burn in our stoves? Where does the fuel come from?

5. What kinds of birds do you recognize? Why are birds useful? Note the difference between the robin and the blue jay, etc.
6. Where does the sun rise? Where does it set? Where is the sun at noon?
7. Study the thermometer. Note the temperature from day to day. Note the directions, clouds, rain, snow, dew, hail, etc.
8. Note the shapes of different kinds of leaves.
9. Study fruits, grains, grasses, etc.
10. Observe occupations of men in the neighborhood.

2. THE JOURNEY METHOD

By the journey method the pupils study countries or portions of countries by means of imaginary trips. Take, for example, a commercial trip around the world to gather products at each port. Pupils select a country they wish to see, and make their preparations as though the visit were to be a real one. Time tables, guides and maps are consulted and the route over which they are to travel is chosen. Through which countries or states will they pass? What cities will they visit en route? What rivers will they cross? What are the occupations of the people along the route? What are the products? For what is each of the cities noted? Pupils should describe the country and all the places of interest. Pupils may travel from Boston to Chicago, from New York to San Francisco, down the Mississippi, from Portland, Oregon, to Minneapolis, or from Portland down the Pacific coast to Los Angeles.

Beautiful pictures of Yosemite Valley, Yellowstone National Park, Niagara Falls, and hundreds of others may be secured by writing to the railroad companies. Children of the school may exchange post card views with the children in the cities to be visited, thus adding interest to the subject. *The National Geographic Magazine* affords much splendid material. Folders of places may be secured in sets; for example, a post card trip around the world, up the Nile River, down the Rhine, across China, etc. A reflectoscope makes these pictures far more interesting. Each pupil, as he tells of his trip, should have pictures to illustrate it. If one has no lantern the pictures may be passed around. Occupations of men, habits and customs are thus fixed in the mind, and geography becomes a concrete and interesting study.

The use of the stereoscope in teaching journey geography is highly interesting and instructive. Professor Redway, in speaking of the use of the stereoscope in teaching, says, "It is evident that whole classes may use them in the ordinary work of demonstration, or the pupil may study them in his ordinary field work—for much of the field work may be done indoors as well as out-of-doors." In the study of foreign countries and their people there are great opportunities. And, indeed, in the use of the stereoscope and stereoscopic views an entirely new field is opened up—a field that hitherto has been closed to both teacher and pupil. Indeed, there is no device more helpful to the teacher

of geography than a stereoscope and a good assortment of stereographs

This method vitalizes geography, heightens the imagination and brings the world close to the pupil. Like all other methods it may be overdone. There is also the danger that the lessons may not be carefully planned. A good plan for the teacher to follow is that of having pupils write up these imaginary journeys and read their reports to the class. It will be even better if the pupil is able to talk from notes. If this method is carefully followed there will be no dull moments in the class period.

3. THE TYPE METHOD

There is some objection to the type method because teachers are not careful in the choice of types. Types of land may be studied in geography as types of animals are made use of in the study of biology or botany,—as when one selects, for example, the pigeon as the bird type or the phlox as an example of a perfect flower.

Professor McMurry says of type studies in geography, "In devising a plan for geography study at least two important problems must be met; 1. The selection of a few important representative ideas out of the countless multitude of facts; 2. A method of approach to these ideas which shall instruct and interest the child."*

*McMurry's "Special Method in Geography," p. 186, used by permission of Macmillan Company, Publishers.

From a mass of geographic material the teacher should be able to choose wisely the type to be used. She should choose her types with the same care and forethought with which types are chosen in biology or in botany. It is well not to select too many types lest the pupils become confused. Fifteen or twenty types should be chosen during the year. Each one should be thoroughly discussed.

1. A coal mine may be used as a type because all coal mines are similar.
2. Rivers are also much alike, as each has a source, mouth, tributaries, bed, banks, etc.
3. A hill may be taken as the mountain type. The flat hilltop may be used as a type of plateau.
4. A lake or pond may be used as a type for the same reason. Study the cause of lakes; how they are fed, their outlets, their islands. Study the products of the lake; note its shores, waves, currents, etc.
5. A plain may be used as a type. A small plain, if denuded of trees, may be compared to a prairie.
6. If there are no forests near at hand the teacher may select a grove or group of trees as a type of forests. This will lead to a study of various kinds of trees, their uses, etc. The pupil should learn where the pine forests are, the oak forests, the sugar maples, etc.
7. The industries of one's home town may be studied and the study broadened to include the larger industries.
8. The railroad is a good type which may be extended to include the great trunk lines, and other means of transportation.
9. Stone quarries, lime kilns, etc., may be used.

10. Stoves, wholesale houses, cold storages, etc, are good as type studies. The home refrigerator may be used as a type of cold storage
11. The town meeting may be taken as a type of government.

A list such as this may be readily extended indefinitely.

The teacher will at once see that the plan of the type method is that of studying one phase carefully as a basis for comparison. Care must be taken, however, not to over-emphasize minutiae. Human interest *must* center around the type. Dr. Tarr has said, "The great advantage of the type area is that it permits a careful study to be made of a few facts, so that pupils may get a real comprehension of the value of geography and so that it perfects natural reviews. This is the strongest argument for following the type method in certain phases of school work."*

Type geography may be studied in connection with home geography, and should precede the journey method of studying geography, for the type will serve as the basis of things seen on the trip. A pupil must interpret the new by use of the old facts in his mind, that his imagination may be exercised.

4. THE MAP-DRAWING METHOD

The map-drawing method, when wisely employed, is of great value to the study of geography. The object of map-drawing is to assist the pupil to fix in mind important facts and relations, and to create images such

*Monroe's "Encyclopedia of Education." Used by permission of The Macmillan Company, Publishers.

as cannot be gotten from pictures or the printed page.

The use of the map-drawing method is, however, attended with certain dangers. Pupils frequently use so little care in the execution of maps that the results of their efforts give rise to distorted ideas. The teacher should, therefore, give constant attention to scale and projection and thus, so far as possible, insure the fact that the time given to map-drawing functions in the geography period.

5. THE TOPICAL METHOD

This method should also be used more in the grammar grades than in the lower grades. The objections to this method are: (1) that it is fragmentary; (2) that it results in the mere memorizing of facts, especially in the lower grades; (3) that it neglects the picturesque side of geography. However, this method is of great value in review work, after the phase or type has been emphasized.

Professor King says: "The alleged disadvantages of the topical method of teaching geography are so insignificant that, in passing, only one need be noticed. It is certain that this method requires more time than the question and answer method. This is true, usually, of the first countries taught in this way, because this method is new to the pupil, and the amount of information given is so much greater than in any text-book; but subsequently there is considerable saving in time effected by the new method."*

*King "Methods and Aids in Geography."

The topical method should supplement the text-book and encourage questions. It requires careful preparation on the part of the teacher. It should inspire enthusiasm upon the part of the pupil. It is well to make generous use of supplementary readers in connection with this method.

6. THE PROJECT METHOD

It is becoming more and more evident that education, to function properly in the life of the child, must accomplish more than simply to acquaint him with a mass of facts. It must stimulate him to a desire to accomplish worthy undertakings or purposes. With this end in view our teaching must therefore be centered around big, dominant undertakings which may serve as units of study. The term *project* is in a sense not a classroom term; it belongs rather to the affairs of every-day life. Just as recent emphasis in teaching has been laid upon the necessity of correlating the life of the classroom with that of the outer world, so modern educational thought is fully alive to the great advantages to be derived from the adoption of these *life-projects,* or schemes, or plans in the course of study in the elementary school.

The child's interest is at the greatest height when he is engaged in the pursuit of some self-chosen *project,*—as the building of a bird-house or doll-house. His interest is also keen when he is asked to aid in the accomplishment of a *project* in the pursuit of which another is engaged. Either of these *projects*

or tasks challenges his thought and frequently his powers of perseverence. In much the same manner older people are stimulated to their best when engaged in the accomplishment of *life-projects*.

Problems.—In the accomplishment of these *projects* numerous problems will frequently arise; in fact, few worthwhile *projects* will fail to present problems of thought and problems of action. The problems presented in the course of the building of the Panama Canal, one of America's greatest *projects* of recent years, seem frequently to be of almost insurmountable character. The major portion of the task of the accomplishment of a *project* will frequently involve the solution of knotty problems.

At this point in our discussion one may be led to question the distinction to be made between the terms *project* and *topic*. In a sense *projects* are big, worthwhile topics. One thinks, however, of the topic and its discussion as in a measure static, whereas a *project* is in every sense dynamic. The *project* is objective and practical. It calls for energy and resourcefulness, provokes thought and secures action.

Professor C. A. McMurry says, "Standing out prominently, almost objectively, as a clearly thought plan to be converted into reality, the project contains the most important elements of a standard unit of mental effort. First, it is an important whole. Secondly, it is dynamic in its essential forward movement. Thirdly, it organizes and uses knowledge on the basis of a definite purpose. Fourthly, it sets up a series

of problems requiring continuous, rational effort. Fifthly, it works out a practical result which is embodied in a concrete object or situation in real life. Sixthly, as an end result of the whole movement, from original conception to final objective realization, it leaves in the mind a knowledge product which serves to introduce and explain other kindred projects. It has a future as well as a past and connects up between the two. Thus it contributes to the continuous organization of knowledge."*

The teacher who causes her teaching to center around the use of *projects* will find it necessary to supplement the material found in her text-book. She will be stimulated to wider reading and study. This practice should cultivate her powers of description and narration. Again Professor McMurry says, "We may even go to the extreme of saying that the teacher should cultivate the power of vivid presentation of topics, of clear and simple exposition. He should develop in a variety of ways graphic power and illustrative resource. In aptness and force of language, he should increase more and more, and in using chalk at the blackboard for diagrams and drawings and maps, he should acquire that ease and versatility which betoken habit. In this direction the teacher grows into a professional expert; he possesses distinctive abilities or qualifications peculiar to his office. He should become not only a master of devices but a

*McMurry's "Teaching by Projects," pp. 13-14. Used by permission of Macmillan Company, Publishers.

discoverer and inventor of devices. This ideal is actually reached in large measure by those who put themselves to the task, and it is a highly honorable achievement. It should not encroach upon the self-activity and independent thinking power of children, but lead up to and encourage self-reliance on their part.'"*

(*b*) Suggested Projects.—

1. *Simple Projects:*
   Example:—
   (*a*) building a cabinet, chicken coop, woodshed.
   (*b*) fencing in a field, cutting brush.
2. *Engineering and Industrial Projects:*
   Example:—
   (*a*) constructing a bridge, tunnel, or railroad.
   (*b*) building a canal, or system of jetties.
3. *Projects of Adventure:*
   Example:—
   (*a*) Columbus' voyage to the new world.
   (*b*) Magellan's voyage around the world.
   (*c*) The Pilgrims' voyage in the *Mayflower*.
4. *Financial and Political Projects:*
   Example:—
   (*a*) Inauguration of the Federal Reserve System.
   (*b*) Hamilton's plan for the national debt.
   (*c*) The campaign for national prohibition.
   (*d*) The campaign for Woman Suffrage.

A list such as this may be readily extended indefinitely.

*Ibid, pp. 245-246. Used by permission of Macmillan Company, Publishers.

CHAPTER VII

EQUIPMENT FOR THE TEACHING OF ELEMENTARY GEOGRAPHY

1. THE GLOBE

The globe does not need to be an expensive one. One about twelve inches in diameter, with lines and print plain enough to be seen distinctly, is best. There is too much machinery to the tellurian globe for the elementary grades. The earth is a sphere (more accurately, an oblate spheroid). One can see but half the globe at a time; this is called a hemisphere. Land and water forms are next observed. The relative proportion of land and water may be readily seen.

2. THE SAND PILE

The sand pile may be made use of for purposes of illustration. Mountains, valleys, rivers, planes, etc., may be represented. The sand pile serves the purpose admirably in the lower grades. Read "The Story of a Sand Pile," by G. Stanley Hall. (Aspects of Child Life and Education," page 142.)

3. THE SAND TABLE

One cannot overestimate the value of the sand table in the primary and intermediate grades. Maps may

be made, forms of land and water shown, towns laid out, farms mapped out, etc. The children should do this work themselves under the direction of the teacher. The sand table need not be expensive, but should be a part of the equipment of every elementary school. The table should be of the right height for the grade in which it is to be used. A cheap kitchen table with a frame four inches wide nailed around it will serve the purpose. Any teacher who has had manual training can construct a sand table.

Clay modelling will also be found useful in this connection.

4. MAPS AND MAP-DRAWING

The map should not be an end in itself but a means to an end. Pupils should be taught not only to draw freehand maps and maps to a scale but they should be taught the map language as well. The pupil should begin his map drawing by making a map of the school room, of the school grounds, of his town, state and country. In this way he will be able to understand the meaning of a map.

Drawing is motor-sensory. The child who is taught to draw will have finer coördinations than the child who is not taught to draw. The eye will also be trained. Visual education should be made a potent factor in the teaching of geography.

The pupil learns accuracy because many maps must be drawn to a scale and exact locations of rivers, cities,

etc., indicated. He will aso acquire an adequate conception of relative size and distance.

Pupils should make maps drawn to the same scale, in order that comparisons may be easily made; for example, New Hampshire and Texas, Vermont and Minnesota, Belgium and the United States, etc.

5. THE PURPOSE OF THE MAP

Professor Wiswell says, "It will be perceived that there is need of some means of obtaining certain fundamental ideas about the earth or parts thereof which cannot be obtained from a picture or a succession of pictures or a view from a car window. A map is one of the inventions to meet this need."

The pupil will grasp the essential features of a large area. He learns directions and relative locations. As a student of history he traces the events of the centuries on maps.

There are no exact methods to be followed in the use of maps, nor can the exact number of years to be given to map study be stated. The wise teacher will make much of map study to supplement the text-book. She will also find specially prepared outline maps of invaluable aid in the teaching of geography.*

In "Groups and Maps in Elementary School" (pp. 56-59), Mr. Wiswell gives a suggestive outline for map study. In Professor Redway's "Reproductions of Geographical Forms" (p. 47), is a chapter on map-

*The author would refer the teacher to the Morrison Outline Maps, published by Hinds, Hayden & Eldredge, Inc.

drawing and map making which is very suggestive. In the same book will be found helpful instructions for sand and clay modelling.

6. OUTLINE MAPS

The following is an illustration of the great possibilities open to the teacher who will make wise use of outline maps.

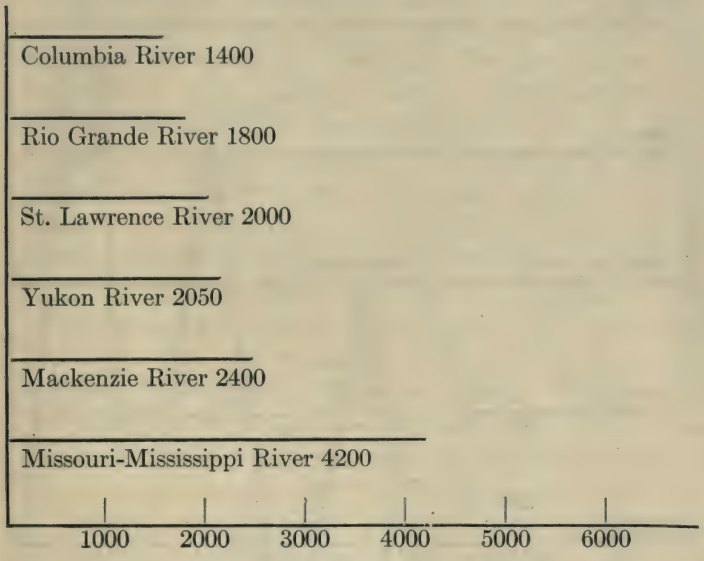
Let the pupils locate on an outline map of the United States the important rivers and fifteen or twenty of the largest cities. Their locations should be discussed and their principal industries studied. Let the pupils then connect these cities by railroads and learn the names of these roads. Let the class then locate and discuss the principal waterways. The teacher will find that recitations of this type will be full of life and interest.

Graphs.—The graph is a very good means for visualizing geography. It may be used in a good many ways, and for such purposes as:

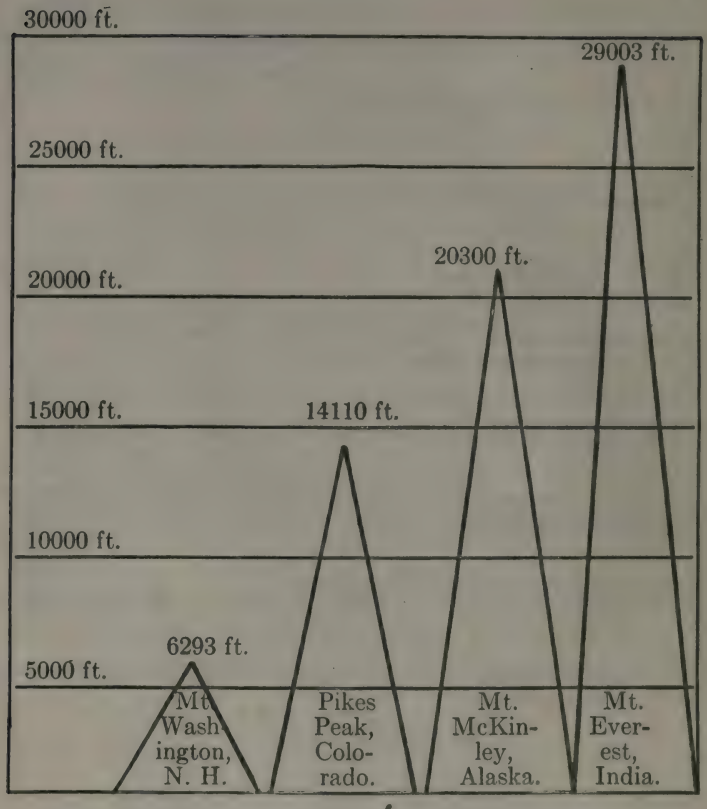
(*a*) the comparison of rivers.
(*b*) the comparison of mountains.
(*c*) the comparison of countries and oceans.
(*d*) the comparison of various crops and industries.
(*e*) the comparison of the growth of industries.
(*f*) the comparison of exports and imports.
(*g*) the comparison of the growth of various industries from year to year.

Leading rivers compared by graphic method.

Require the pupils to make graphs.



Another means for showing comparisons is by the graphic methods. Take for example, mountains or highest peaks in the mountain systems, namely Mt. Washington (N. H.), Pike's Peak (Colorado), Mt. McKinley (Alaska), Mt. Everest (India).



These are the most familiar peaks; their ratios are roughly 1, 2, 3, 4 (to be exact 1, 2¼, 3¼, 4¼).

Rivers may be compared in the same manner. Growth of population in the United States from decade to decade can be represented in a similar manner.

7. THE USE OF PICTURES, FILMS, ETC.

The most important of the sense organs is the eye. There is an old adage, "Seeing is believing." But pupils must be so trained that they will see things as they are. The practical things of life, most of which are treated in geography, can be pictured—"visualized." A great many things may be seen at first hand, as rivers, cities, forests, farms, hills, factories, etc. Other things may be seen in pictures.

Many industrial concerns have prepared for the moving picture machine films which are suitable to school use; for example, films descriptive of wheat-raising,—harvesting the wheat, threshing the wheat, grinding it into flour, and finally making it into bread. This may be seen in such a connected way that pupils will be able to visualize and explain the entire process. Textiles are likewise shown. Various other educational films may be secured. The teacher may find out where to secure any film desired by writing to Visual Education, 327 La Salle St., Chicago, Ill.

Pictures in geographies should be studied and discussed in the class. Take, for instance, a picture of harvesting wheat. The class may discuss to advantage such topics as—Where does wheat grow? How is the soil prepared for the seed? How is wheat harvested now? Discuss harvesting with the sickle, the cradle, and the reaper. What other grains are similarly grown and harvested? Give the uses of each. Discuss transportation, milling, etc.

Other pictures may be taken from a geography,

such as Fishing in Newfoundland, Picking Cotton, A Dairy Herd, A Maple Sugar Plant, A Meat Packing Plant. A discussion of these pictures may be conducted as a socialized recitation.

Another means of obtaining results is by the use of "Habitat Groups in the Teaching of Geography." For further information upon this method read Professor Atwood's article in "Visual Education," in Volume I, No. 3, May, 1920; also "First Steps in the Study of Geography," in Visual Education, Volume I, No. 1.

CHAPTER VIII

AIDS TO THE TEACHING OF MATHEMATICAL GEOGRAPHY

At this point it seems highly important to discuss the best methods of teaching that bugbear to many teachers—mathematical geography. If the teacher will seize every opportunity to correlate the pupil's knowledge of arithmetic with his knowledge of geography, she will find that many of the usual difficulties incident to the study of this phase of the subject will melt away.

Another practice which will prove of invaluable aid to the classroom teacher is that of employing the frequent use of simple devices, some of which have been mentioned in the preceding chapter. In the following pages an endeavor has been made to indicate, through the use of simple devices and illustrations, ways in which the teacher may present some of the topics and problems which often prove difficult of explanation and solution to the average class.

1. THE FORM OF THE EARTH

There are several proofs of the fact that the earth is a sphere. One of the best is the fact that the earth casts a circular shadow upon the moon. If placed in

just the right position between the sun and moon a circular disk might do the same thing, but it might also be so placed that its shadow would be only a line instead of a circle. As the earth rotates upon its axis it could not cast a continuously circular shadow unless it were a sphere.

Another proof that the earth is a sphere is the fact that men have succeeded in sailing around it. Columbus partially succeeded in this task in 1492, but Magellan accomplished it a few years later.

Still another type of proof lies in the fact that when a vessel comes into a harbor the mast is seen first, then the rigging, and lastly the hull. This of course shows that the earth's surface is curved. (Draw on the blackboard figures illustrating this proof.)

2. THE SIZE OF THE EARTH

It is difficult to comprehend distances which extend beyond one's experience. For a pupil to say glibly that the circumference of the earth is 25,000 miles is meaningless unless he is made to comprehend in a measure this distance. But suppose some problem is given the pupil whereby he may gain a comprehension of these distances by use of a unit of measure within his daily experience. For example, let the teacher ask how many miles an automobile travels in an hour. Of course various answers will be given. Suppose the rate of twenty-five miles per hour is determined upon. If an automobile runs 25 miles in an hour, how far will it go in 10 hours? Answer, 250 miles. If

the circumference of the earth is 25,000 miles, how many days would it take to ride around the earth in an automobile going at the rate of 250 miles a day, provided a road encircled the earth. Answer, 100 days. How many months is one hundred days? How many weeks?

Or again: How many miles can one walk in an hour? In a day? If he can walk 25 miles a day, how many days would it take him to walk around the earth at the equator, under the same provision as before?

3. THE EARTH'S POSITION IN THE SOLAR SYSTEM

First, let pupils learn what a planet is, how it differs from our sun, and learn the position of the planets in order, beginning with the one nearest the sun. Then

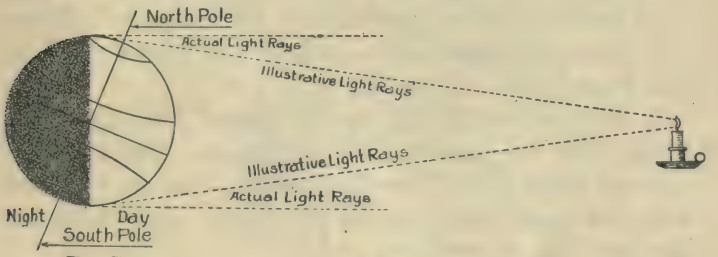


FIG F

Figure "F" shows a simple device for illustrating the causes of day and night. The figure shows a globe and a candle. The rotation of the earth on its axis can be fully explained by this method. (See "Niver's Geography.")

let them draw a diagram showing the relative size of each. This may be drawn on the blackboard or on large sheets of paper. The recitation may be socialized by having the pupils work together in the making and the explanation of the diagram.

4. THE EARTH'S MOVEMENTS

1. Rotation of the earth on its axis. The simplest devices to explain rotation are: (*a*) The spinning of a top; (*b*) The suspended ball or apple whirling around; (*c*) The rotating globe. Let each child illustrate rotation until the idea becomes thoroughly fixed in his mind.

2. The causes of day and night. (*a*) Illustrate by drawings, as in Fig. F. (*b*) Place a globe or other spherical object some distance from a lighted candle or lamp. Let the lamp or candle represent the sun. Note that the light shines on but half the globe. Rotate the globe, noting changes. Have the pupils perform this experiment. (See Fig. F.)

3. Revolution of the earth around the sun. Explain fully the meaning of revolution. Illustrate by placing some object representing the sun on the desk and then carrying the globe around it. Let the pupils perform the experiment.

After the class understands the meaning of revolution perform the experiment shown in Fig. G. Let a lighted candle represent the sun. A suspended light bulb may be used to represent the north star. (See Fig. G.) Carry the globe around the sun, keeping the

north pole of the globe pointing to the north star. Note the changing positions of the poles of the earth in relation to the sun. Note the zones. Note the inclination of the earth on its axis. After the pupils have performed the above experiment have them explain the change of seasons. The text-book may now be studied. Most text-books are filled with good suggestions, but the teacher should supplement them with the use of practical experiments. (For further illustration of the causes of day and night and the change of seasons the author would refer the teacher to the Niver Geographies.)

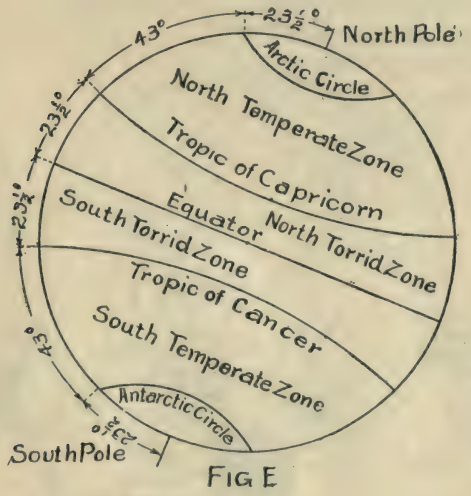


FIG E

Figure "G" is a simple device for illustrating the change of seasons. The sun in the center may be a lamp or candle, the north star a lamp or candle on the ceiling. Carry the globe around the lamp which represents the sun. Keep the north pole of the earth always pointing toward the north star (candle on ceiling), as shown in the illustration. The revolution of the earth around the sun and the inclination of the earth on its axis may be explained by this device. Require the pupils to perform and explain the experiment. (For fuller details, see "Niver's Geographies.")

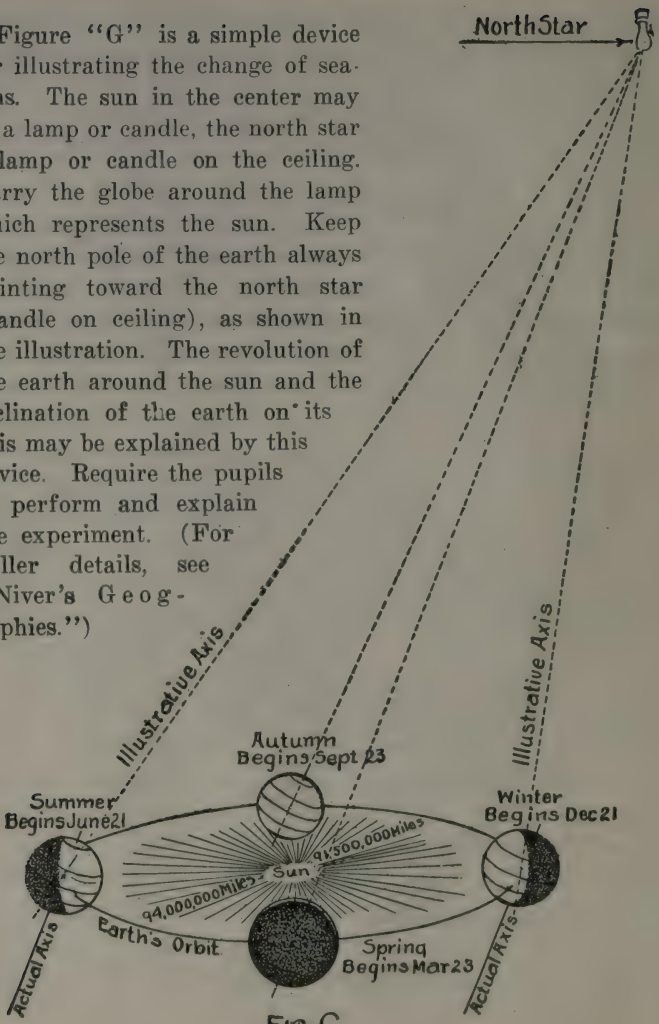
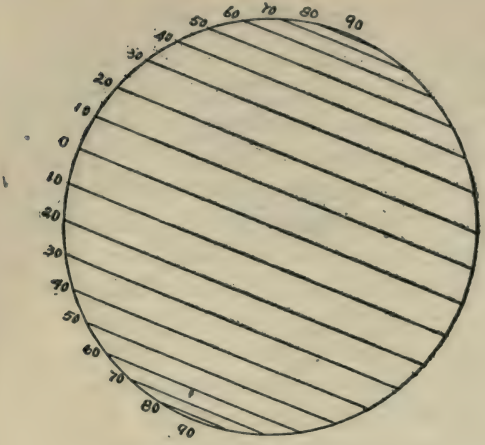
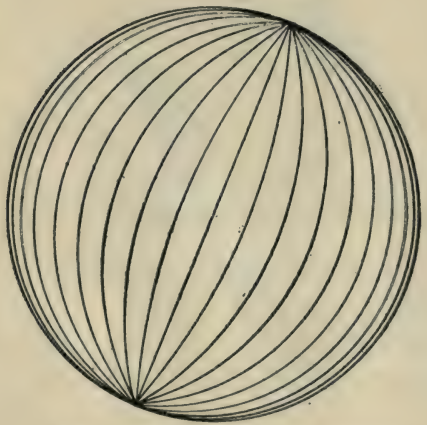


FIG. G



PARALLELS OF LATITUDE
FIG A



MERIDIANS OF LONGITUDE
FIG B

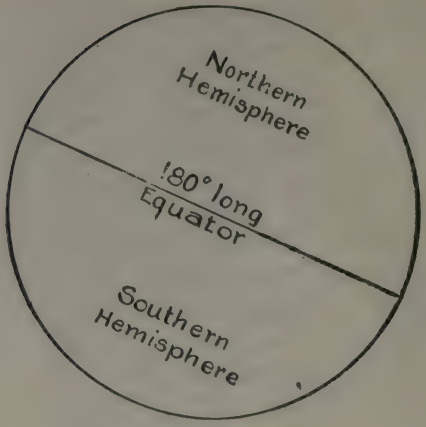

Northern
Hemisphere
180° long
Equator
Southern
Hemisphere

FIG C

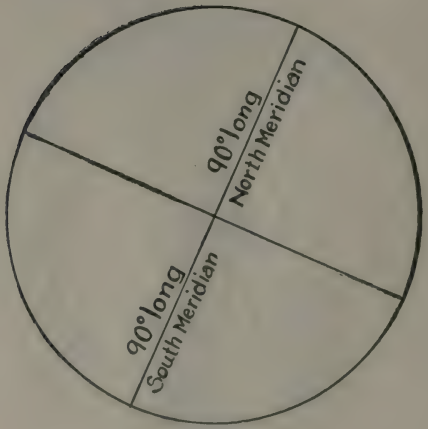
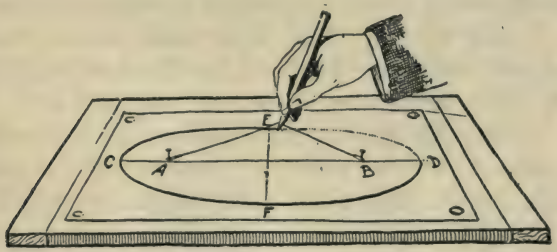

90° long
North Meridian
90° long
South Meridian

FIG D

5. THE EARTH'S ORBIT

The earth's orbit is not a circle but an ellipse. On a small scale such as that used for illustrative teaching, one could not discern a difference between a circle and an ellipse. However, the teacher should show the class by a drawing what is meant by an ellipse.

An ellipse may be drawn as follows: Place a sheet of paper or cardboard on a table or drawing board. Fasten the corners with thumb tacks. If the cardboard is about 12 inches square place a small nail about three inches from each side of the cardboard. That leaves nine inches between the nails. Now fasten to the nails a string about 12 inches long. Follow around the string with a pencil, keeping the string tight.



6. GENERAL SUGGESTIONS

Figures A, B, C, D, E, should be carefully studied. Let the pupils draw figures similar to these. In a short time they should be able to reproduce these figures from memory.

Require definitions of meridian, parallel, equator,

tropics, hemisphere, zone, etc. Introduce ways of telling time. Study longitude and time. Let pupils locate places on the map and globe with reference to latitude and longitude. (For further study see Niver's "Advanced Geography," pages 197, etc.)

7. LATITUDE AND LONGITUDE, PARALLELS AND MERIDIANS

How best to explain to pupils the meanings of parallels and meridians is a vexatious problem to many teachers. The author believes that they should be studied first by use of the globe. Let the pupil point out on the globe (*a*) the north pole, (*b*) south pole, (*c*) equator, (*d*) tropics, (*e*) zones, (*f*) prime meridian, (*g*) meridians, (*h*) parallels. Let him next study his text-book, after which he should be able to draw Figures A and B. Let him now study maps, locating places and countries by use of parallels and meridians.

Let him study the value of latitude and longitude. Have the pupil study the use of the compass. He should know what is meant by a degree, minute, second, longitude east, longitude west. If it is 12 o'clock noon in Boston he should be able to tell whether it is before or after noon in Chicago, in Paris, Moscow. He should be able to find out the difference in time between these places.

CHAPTER IX

STANDARD TESTS AND MEASUREMENTS IN GEOGRAPHY

In the commercial and industrial world everything is measured, weighed and standardized. Everyone knows what is meant by a yard, a gallon, an acre, a pound, etc. These standards are the same in all parts of our country. It is just as essential to have educational measurements standardized, in order that teachers may measure definitely the results of their work. A mechanic knows what constitutes a day's work,—how many bricks laid, how many yards of plaster spread, how many doors hung, etc.

Measurements are of value to the superintendent in order that he may determine the quantity and quality of the work of his teachers. He can then make comparisons with that done in similar grades elsewhere and with given standards, and will be able to criticize the work of his teachers more intelligently.

Standard tests are valuable to the teacher because the weak as well as the strong points of her teaching may thereby be more easily determined. By the use of standard tests the teacher is enabled accurately to determine what phases of the class work need greater stress. These tests should therefore serve as a stimulus to better work.

Professor Cubberly, in his introduction to "Educational Tests and Measurements,"* by Monroe, Devoss and Kelly, says, "The significance of the new standards of measurements for educational service is large. Their use means nothing less than the ultimate transformation of school work from guesswork to scientific accuracy." Again he says. "To the teacher it cannot but eventually mean not only concise and definite statements as to what she is to do, in the different subjects of the course of study, but the instruction in those items which can be proved to be of importance for intelligent living and future usefulness It will mean, too, an ultimate differentiation in training for the different types of children with which the teachers now have to deal, and specialization of work so as to enable teachers to obtain more satisfactory results."

Standard tests to be valuable must indicate clearly what they are meant to point out.

1. Have a definite aim in view.
2. Be brief so that the element of fatigue may not prove a factor in the accuracy of the results attained.
3. Grade carefully so that the steps are accurate between the grades; that is, there should be the same difference in difficulty between the 4th and 5th grades as there is between the 3rd and 4th, etc.
4. Be so definite that teachers will not vary greatly in marking the same tests.
5. Base tests on the developmental aids of the child. His likes and dislikes should enter into consideration.

*From Riverside Series of "Textbooks in Education," published by Houghton, Mifflin Company.

Standard tests have been quite definitely worked out in arithmetic, reading, writing, and spelling. The tests in these subjects are being widely used. In the content subjects, as geography, history, etc., tests have been so nearly perfected that definite standards will soon be formulated.

Owing to the abundance of subject matter and the diversity of topics in geography, it is difficult to prepare definite standards. However, considerable progress has been made toward standard geography tests during the last two or three years. Dr. Frank W. Ballou* has worked out tests on the United States and on Europe. These tests, however, are confined to the eighth grade. Prof. E. E. Lackey,† has prepared a set of geography tests which is coming into wide favor. Superintendent Ernest Witham‡ has worked out some excellent tests. The author has also prepared a graded test.

In speaking of his own tests, Dr. Frank W. Ballou says, "The preparation of a geography test, applicable to a number of schools working under widely different conditions, has been approached with full realization of the difficulties involved. Perhaps the greatest difficulty of all is that offered by the subject itself. The field covered by geography in the elementary school, as at present defined in the course of study, is so broad that no school can be expected to

*Dr Ballou, formerly Director of Educational Measurements, Boston Public Schools

†Prof. E. E. Lackey, Department of Geography, Nebraska State Normal School, Wayne, Neb.

‡Superintendent Ernest Witham, Southington, Conn.

cover it thoroughly. For this reason it is necessary to limit the questions to those phases of the subject concerning the value of which there is little or no difference of opinion. Another difficulty was that of putting the questions in a form which will make the meaning clear to each pupil. It is this problem which makes it seem necessary to limit the tests in the elementary schools to the eighth grade. Geography, unlike arithmetic, does not lend itself to the use of tests in which little or no language is used. It is also important that no particular division of the subject be over-emphasized. The most careful judgment must be exercised in deciding how much of any topic of geography pupils in any one grade should be expected to know.

"Although this problem is difficult, it is one which is constantly presenting itself whether standard tests are given or not. It is a question which must be settled more or less definitely whenever text-books are selected, whenever a basis for promotion is determined, whenever a course of study is written, or whenever a teacher interprets a course of study."*

The tests below were given to the eighth grade pupils of the Boston Public Schools, under the direction of Dr. Ballou. His reasons for confining these tests to eighth grade pupils are found in the paragraph just quoted. These tests consisted of two series, one on the United States, the other on Europe. The tests are published by permission of Dr. Ballou.

*Dr. Frank Ballou's "Geography Tests."

1. THE BALLOU EIGHTH GRADE GEOGRAPHY TESTS

Questions on the United States

1. Locate on the map the cities named at the right:

	Cities	*Products*
2. In the column marked "Products," write opposite the name of each city the name of a product for which the city is noted.	Minneapolis	
	Pittsburgh	
	Lowell	
	New Orleans	
	Duluth	
	Galveston	
	Lynn	

3. Give reasons for the growth of Minneapolis.
4. Below is given a list of articles which we use in our homes. Write below each word the name of the State in which that article is produced in large quantities. Cotton, oranges, cane sugar, rice, coal, iron.
5. Write on the map the name of each State which you have just written in answering Question 4.
6. Why do the States just east of the Rocky Mountains receive less rain than Massachusetts?
7. Explain the way in which the flood plains of the Mississippi River have been formed.
8. Why are these flood plains good for agriculture?
9. Locate New York City on the map. Locate San Francisco on the map.
10. Give reasons why the commerce of San Francisco is not so important as that of New York City.

Question 1.—Locate on the map these cities: Minneapolis, Pittsburgh, Lowell, New Orleans, Duluth, Galveston and Lynn.

The reason for the selection of a question of this kind needs little explanation. All will agree that pupils should know definitely the location of the most important cities of every

region studied. No city was included to which objection was offered either by a member of the Committee on Standards in Geography or by any of the persons to whom the test was submitted.

Question 2.—In the column marked "Products" write opposite the name of each city the name of a product for which the city is noted.

Cities	*Products*
Minneapolis	
Pittsburgh	
Lowell	
New Orleans	
Duluth	
Galveston	
Lynn	

In this question no city has been chosen which does not stand for at least one important product. There is little value in knowing the location of places to which no significance is attached.

Question 3.—Give reasons for the growth of Minneapolis.

It is of some value to know the location of cities, and in case of the more important cities the products for which they are noted, but it is of greater importance for the pupil to be able to account for the development of a city in any given location. It is this latter phase of geography which makes a knowledge of the subject invaluable in that it enables the individual to explain the development and distribution of industries or occupations and thus leads to an understanding of conditions of life.

Question 4.—Below is given a list of articles which we use in our homes. Write below each word the name of the State in which that article is produced in large quantities.

Cotton, oranges, cane sugar, rice, coal, iron.

Question 5.—Write on the map the name of each State which you have just written in answering Question 4.

From the study of the geography of a country pupils should gain a knowledge of its chief producing regions. While some products are pretty generally distributed there are a few which are produced in larger quantities only in some one section of the country. Question 4 implies that a pupil should be able to associate products with those portions of the country which produce them in largest quantities and should be able to locate the regions with a resonable degree of accuracy.

Question 6.—Why do the States just east of the Rocky Mountains receive less rain than Massachusetts?

Question 6 requires that pupils have knowledge of the manner in which rainfall is affected by mountains and by distance from the sea.

Questions 7 and 8.—

7. Explain the way in which the flood plains of the Mississippi River have been formed.
8. Why are these flood plains good for agriculture?

Knowledge of the formation of land forms is valuable in that such knowledge, as in the case of flood plains, explains in large measure the influence of the regions upon activities. The fine soil, variety of material and level surface, all of which make a flood plain good for farming are accounted for by its method of formation.

Question 9.—Locate New York City on the map. Locate San Francisco on the map.

Question 9 involves simple location, as does Question 1.

Question 10.—Give reasons why the commerce of San Francisco is not as important as that of New York.

The importance of a commercial city, as is well known, depends largely upon three conditions: The character of the coast upon which the city is located; the character and acces-

sibility of the interior which it serves, and upon its proximity to the shores of other commercial regions.

After studying the commercial cities of the leading countries, pupils should be able to sum up the conditions necessary to the development of such cities. Granting that such ability has been acquired, it should then be possible to apply these principles in explaining the advance of one commercial city over another.

Questions on Europe

(An outline map of Europe was printed at the head of the questions.)

1. Locate on the map two seaports of European Russia.
2. Why are the seaports of Russia not so important as the seaports of England?
3. Of what value to the countries of Europe are their colonies in other parts of the world?
4. Why does England import large quantities of wheat?
5. Write on the map the names of the leading manufacturing countries of Europe.
6. Why has England become very important as a manufacturing country?
7. Why is the climate of Italy different from that of England?

Question 1.—Locate on the map two seaports of European Russia.

This question like Question 1 on the United States asks for simple location.

Question 2.—Why are the seaports of Russia not so important as the seaports of England?

Question 2 is one in which knowledge of the map and the ability to interpret it enables the pupil to answer satisfac-

torily. This question gives the pupil a good opportunity to apply principles acquired in the study of other regions. He notes the effects of latitude upon the northern harbors, that in all cases the ports are far removed from the open oceans, and are approached through narrow straits which may be easily controlled by other nations.

Question 3.—Of what value to the countries of Europe are their colonies in other parts of the world?

This question is an illustration of a type which may be used to measure the knowledge of the more advanced as well as that of the elementary pupil.

Ability to answer this question would indicate such teaching of geography as enables pupils to interpret present-day conditions.

Question 4.—Why does England import large quantities of wheat?

This question was written with the view of testing the pupil's ability to explain the dependence of one producing region upon another. It proved, however, to be one of the least satisfactory questions of the whole test. While nearly every pupil attempted an answer many failed to grasp the real significance of the question. It was expected that the question would call to mind the small area of the country, the dense population, and the fact that the industries of the country are essentially manufacturing occupations.

Question 5.—Write on the map the names of the leading manufacturing countries of Europe.

This question really consists of two parts: First, the names of the countries; and second, their location. Consequently, the answers were divided into two parts: 5a, the names of the countries; and 5b, their location. Three points were allowed for each part. The question was considered

correctly answered if any three of the five important manufacturing countries were named and correctly located.

Question 6.—Why has England become very important as a manufacturing country?

This question is similar to that of number 3 on the United States. All will agree that the child's knowledge of the geography of a country is extremely superficial if it does not include reasons for the development of the more important industries.

In the case of a country as important as England, pupils might be expected to know of the deposits of coal and iron, of the progressiveness of the people, of comparatively easy communication with the rest of the world, and of the ability of the country to supply a considerable part of the raw material for manufacturing. Naturally but few pupils would be expected to give all of the advantages enumerated, but if the country has been studied at all, practically every pupil should be able to give some of the reasons for the development of so important an industry as manufacturing in England.

Question 7.—Why is the climate of Italy different from that of England?

After completing the study of Italy and England, pupils cannot fail to note the wide difference in the agricultural products of the two countries and to see that this difference is due primarily to climate. A rather general study of the climate of the two countries should show that Italy is nearer the equator than England, that she is protected from the cold north winds by the Alps, that her climate is tempered by the warm waters of the Mediterranean and that the country is exposed to warm winds from the south.

Dr. Ballou says, "From general observation of the results here shown one would inevitably conclude that the knowledge and ability possessed by the pupils tested are inadequate, assuming of course that the questions are such that the pupils ought to be able to answer them. With not a pupil among the 845 examined passing the test on Europe, and with only about 5 per cent passing the test on the United States, no other conclusion is possible. And yet possibly the questions asked are inappropriate. All this is merely a matter of opinion.

"There are at present no standards by which one may judge whether or not the results from these two tests are all that should be expected. No one actually knows with what degree of success a group of pupils ought to answer any one of the questions asked in these tests. What portion of an eighth-grade class ought to be able to locate correctly New York City? What per cent of the eighth-grade pupils should know in what State cotton is produced in large quantities? What per cent of eighth-grade pupils should know how the flood plains of the Mississippi river were formed? What portion of the eighth-grade pupils should be able to locate two seaports of European Russia? In short, should eighth-grade pupils be expected to answer each question asked? If so, with what degree of accuracy?

"These are questions which cannot be answered from knowledge which we now possess. It is the function of a department of educational measurement to

United States Distribution Table, January, 1915.

	Number of Units of Credit Earned by Each Pupil.																																		
	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.
14 Eighth Grade Classes (594 pupils)				2	5	1	3	7	9	8	12	11	13	8	9	15	30	28	22	18	29	35	27	32	34	35	34	35	35	23	27	15	14	12	4	2	4	1

Total number of units of credit obtainable, 46; necessary to pass, with 70 per cent as passing, 32 units. Number of pupils obtaining at least 32 units is 37, or 8.7 per cent of those tested. Median amount of credit earned is 23.15 units.

4 Third-year High School Classes (166 pupils)									2		3	3	1	4	3	4	5	11	5	4	7	9	8	11	5	5	12	9	9	11	8	3	5	1	5	3	2	2	1

Number of pupils obtaining at least 32 units is 8, or 4.8 per cent of those tested. Median amount of credit earned is 20.8 units.

1 First-year Normal School Class (86 pupils)															2	2		1	3	5	2	3	9	1	5	8	4	5	7	9	2	7	5	3	2	1			

Number of pupils obtaining at least 32 units is 1, or 1.1 per cent of those tested. Median amount of credit earned is 23.5 units.

Europe Distribution Table, January, 1915.

	Number of Units of Credit Earned by Each Pupil.																		
	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
14 Eighth Grade Classes (593 pupils)	9	22	24	32	25	35	28	28	47	52	61	71	49	43	38	13	8	7	1		
4 Third-year High School Classes (165 pupils)	5	7	9	15	14	6	4	12	12	19	19	10	12	11	6	1	1	2			
1 First-year Normal School Class (87 pupils)	1	3	2	3	2	2	10	10	6	9	10	8	9	4	3	3	1		1		

Total number of credits obtainable, 28. Necessary to pass, with 70 per cent as passing, 20. Not a pupil in any of the three groups passed.

Summary of Dr. F. W. Ballou's Tests in the Boston Public Schools

procure the knowledge which will make it possible to answer them. Such knowledge will furnish the basis for establishing objective standards of achievement in this subject."

2. THE HAHN-LACKEY SCALE

Prof. E. E. Lackey, speaking of the "Need of a Measuring-Stick" in geography says, "The ability of children in geography has been measured in the past to be sure, but always in terms of subjective standards that vary with teachers and schools. The results of such measurements can have little value in coöperative schemes for improving geography instruction. For this purpose an objective measuring-stick is needed whereby the ability of children in geography may be measured and expressed in units that mean the same thing to everybody, thus affording a common basis for coöperation. The 'Hahn-Lackey Scale for Measuring the Ability of Children in Geography' is such an objective scale."*

The Hahn-Lackey Scale consists of 216 questions and exercises. Practically every phase of geography is included. The scale is searching in its effects. Professor Lackey says, "It was the aim to make the questions and exercises a test on materials worthwhile in geography.

The tests in each scale are about half memory tests and half rational tests. A fourth-grade pupil, Professor Lackey says, ought to make a grade of 34 per

*Used by permission, J. L. Hammett Co., Publishers.

cent; a fifth-grade pupil 50 per cent; a sixth-grade pupil 58 per cent; seventh- or eighth-grade pupil 73 per cent.

Some of the uses which Professor Lackey claims for the scale are:

"1. To measure a pupil's ability in geography for promotion or classification.

"2. To measure the ability of a class as a whole for comparison with the standards given in the scale.

"3. To compare the progress of a year's work in geography for comparison with the normal progress shown by the scale.

"4. To measure the balance between the different phases of geography work.

"5. To measure the merit of different methods of instruction and school organization."

This scale is a valuable contribution to education and should be in the hands of every elementary school teacher.

TABULATION OF THE HAHN-LACKEY SCALE

GRADE	IV	V	VI	VII	VIII
Per cent. made by grades	34	50	58	73	73

This scale, constructed by H. H. Hahn, Head of Department of Education, and E. E. Lackey, Head of Department of Geography, Wayne State Normal School, Wayne, Nebraska, is based upon 283,100 answers by 1,696 pupils in 12 schools. The data of the scale are

so arranged that from 15 to 20 tests can be given each grade without the repetition of a single exercise. The exercises in each step are approximately equal in degree of difficulty. To be exact, in no case does the absolute value of an exercise deviate from the approximate value by more than four-tenths of a step, and this only in a very few cases. Expressed in per cent, this means that of the given values, say in step M, 50 represents values from 46.8 to 53.2; 34 represents values from 31.2 to 37.2; 27 represents values from 24.6 to 29.8; and 16 represents values from 14.4 to 18.0. The differences between consecutive steps are also approximately equal.

Some Uses of the Scale

1. To measure a pupil's ability in geography for his promotion or classification. Thus, if he answers correctly 42 per cent of the exercises in step L, he is ready for the eighth grade. If he answers 27 per cent correctly, he may be promoted to the seventh grade; 21 per cent, to the sixth grade; 12 per cent, to the fifth grade.

2. To measure the ability of a class as a whole for comparison with the standard given in the scale: Thus, on a test taken from the list of exercises, in step J, the average score of a seventh grade, at the close of the year, should be 27; that of a sixth grade, 16; that of a fifth grade, 12; and that of a fourth grade, 6.

3. To measure the progress of a year's work in geography for comparison with the normal progress shown

by the scale: During the year, a fifth-grade class should advance two steps in terms of the scale; a sixth-grade class, one step; and a seventh-grade class, two steps.

4. To measure the balance between the different phases of geography work. The exercises of the scale cover all phases of subject-matter treated in recent text-books on geography. By studying the nature of the exercises missed by her pupils in various tests, the teacher may discover to what phase of the work she should give more attention. Especially is this true in the arrangement of the data of the scale for the purpose of testing the balance between memory work and thought work. The exercises that provoke thought are in heavier type.

5. To measure the merit of different methods of instruction and of school organization: It furnishes a scientific basis for determining the value of such work as map drawing, laboratory exercises, field work, problem assignments, use of stereoscopes, lanterns, etc. Of all the elementary school subjects, geography is undoubtedly the best for testing the value of departmental instruction and supervised study. It may also be used to study individual differences among pupils of the same school grade, and overlapping of grades. For all such experimental work this scale gives new and larger opportunities.

Copies of this scale may be obtained for seven cents apiece. A monograph describing the method of the derivation of the scale will soon be ready for publica-

tion. Address the authors, Wayne State Normal School, Wayne, Nebraska.

3. WITHAM'S STANDARD GEOGRAPHY TESTS—THE UNITED STATES

(*a*) Purpose of the tests.—The general purpose of these tests is to enable those responsible for the quality of instruction to measure the work being done by the pupils and teachers in the subject of geography in their school systems. These tests offer a reliable means of getting a large body of facts, and a record of geographical thinking in a minimum amount of time. These tests are also intended for wide-awake individual teachers who are always looking for school room helps.

(*b*) Directions for giving "The United States Test."—For supervisory purposes it is best to have the same person give this test in all the different rooms; but this is not absolutely necessary. Where several are to give the test, they should all be given general instructions beforehand, so as to make the conditions the same.

This test should be given in the winter term to all sixth grades. By this time the pupils should know the geography called for. If it turns out that a class as a whole are not able to make a good score on the test, it is not too late in the year to begin to remedy the defects. Individuals who are below should be given special attention. This test will be especially helpful in diagnosing their difficulties.

A Section of the Hahn-Lackey Scale*

Issued by permission

Grade	I	J	K
4th	4	6	8
5th	8	12	16
6th	12	16	21
7th	21	27	34
8th	21	27	34

115. Name two important valleys of the United States near the Pacific coast.

127. Why is mining an important business in the Appalachian region?

217. Name five natural wonders of the U. S.

114. Why is New York so important as a dairying state?

132. Why doesn't California grow much corn?

172. Why is the Trans-Siberian railroad of so much importance to Russia?

173. Why is the Niger river of less importance than the Nile?

178. Give one reason why Chicago rather than St. Louis has become the railroad center of the middle west.

121. What is a divide? A river system?

170. Name and locate four important cities of Asia.

178. What effect does warming air have on its capacity to hold moisture?

192. Name a railroad connecting the following: Omaha and Chicago; Omaha and San Francisco; Chicago and New York City.

219. Name the four largest islands of the West Indies.

137. Why is Pennsylvania so important in iron manufacturing?

145. Why is there such a variety of climates and products in Columbia, Ecuador, and Peru?

147. Give one reason why the highlands of tropical South America are more densely populated than the lowlands.

148. Why is the Amazon of less commercial importance than the St. Lawrence?

120. What instruments are used to find out the heat and the weight of the air?

140. Locate St. Louis and Cincinnati.

141. Draw a line showing the direction of the principal mountain system in each of four continents.

153. Name five important ports on the continent of Europe.

167. Name two religions of the people of Asia and give one nation belonging to each.

181. Name four industries based on animal products.

209. What and where are the following: Nova Scotia, Calcutta, Good Hope, St. Elias, Moscow, Bagdad?

210. What states would you cross or touch in going from Philadelphia to Denver?

213. Which is larger, Maine or your own state, and about how much larger?

*A scale for measuring ability of children in geography in grades 4, 5, 6, 7 and 8.

Every pupil should be given a test paper. A few general words of advice should be given to the pupils in regard to carefulness, neatness, and honesty. The pupils should be told not to hurry, as they will be allowed all the time they need to complete the test. (The usual time is about 30 minutes for all to complete the sixth grade test.) The pupils should next fill in their name, school-room and date at the top of the page.

Pupils should be instructed to answer all of the questions on the first page before being allowed to open the papers.

The examiner should rapidly note the progress of the pupils and see that all get started immediately on the outline map. Three or four minutes should be enough for this, but some will take longer.

As fast as pupils finish their tests they should be instructed to hand their papers in.

In sections 4, 5, 6, 7, and 8 the pupils should be told that all the features called for are represented on the map on page 2 All they need to do is to pick them out and name them.

In section 9 the pupils should be told that Coal and Iron are combined on one map. Also Gold and Silver are combined on one map The other eight industries are each represented separately.

c. Directions for Scoring "The United States" Test.

(*d*) Correction of papers —Correct each section of the test as directed and record the number of attempts,

also the number of right points in the rectangles at the tops of the pages.

I. Possible points—5.

Allow one point for each of the four boundaries approximately right, and one point for general merit for a perfect score. To be scored 5 an outline should have the principal irregular features such as Maine, Cape Cod, Florida, Texas, and the Great Lakes.

II. Possible points—5.

One point each is to be allowed for western, eastern, and northern boundaries and two points for the southern boundary. Mexico and the Gulf of Mexico count two, and either one alone counts one point.

III. Possible points—2.

An approximate location of the home State and its capital; each counts one point.

IV. Possible points—10.

Each river counts one point.

V. Possible points—5.

VI. Possible points—9.

Each of the Great Lakes correctly indicated counts one point. The other four features each count one point.

VII. Possible points—15.

There is a circle for each of the 15 cities. Each one properly labeled counts one point.

VIII. Possible points—5.

IX. Possible points—10.

Each map correctly marked counts one point. The key is as follows: No. 1, Cotton; No. 2, Wheat; No. 3, Corn; No. 4, Cattle; No. 5, Gold and Silver; No. 6, Forests; No. 7, Coal and Iron; No. 8, Manufacturers; No. 9, Sheep; No. 10, Fisheries.

(*e*) Recording results.—The next step is to record upon the class record sheet the results already marked in the little rectangles at the tops of the test papers.

"Sc" on the record sheet stands for score. The two blank columns at the left of each section are for the number of points attempted, and the two blank columns at the right of each section of the record sheet are for the number of points right. F is for frequency and S is for sum of the frequencies. The recording should be done one section at a time.

First arrange the test papers into groups according to the number of answers attempted in section one. In this section nearly all will probably be recorded as attempting the 5 points. Next, arrange the papers into groups according to the number of points right. For example, let us suppose we have a class of 30 distributed as follows: 5 papers with 5 points, 8 papers with 4 points, 10 papers with 3 points, 4 papers with 2 points, 2 papers with 1 point, and 1 paper with 0 points right. In this case record on the right side of the Sc section 1 under F, 5 opposite 5, 8 opposite 4, 10 opposite 3, 4 opposite 2, 2 opposite 1, and 1 opposite 0.

Multiply F in each case by the opposite Sc to get the Su. In our example this would give 25, 30, 8, 2, 0, for Column S. These added give 97. 97 divided by 30 equals 3.2, the average number of points right in section one.

Record the other 8 sections in the same manner.

(*f*) Graph.—To get a class graph of your results make an X as near as possible at the point on each section of the graph sheet which indicates the average number of attempts. Connect these with a solid line. Similarly construct a graph showing the average number right for each section, using a broken line.

1. Outline of U. S.	5		4		3		2		1		0
2. Boundaries.	5		4		3		2		1		0
3. Home State.		2				1					0
4. Rivers.	10	9	8	7	6	5	4	3	2	1	0
5. Mountains.	5		4		3		2		1		0
6. Lakes, Bays, and Gulfs.	9	8	7	6	5	4	3	2	1	0	
7. Cities.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. States.	5		4		3		2		1		0
9. Industrial Regions.	10	9	8	7	6	5	4	3	2	1	0

WITHAM'S STANDARD GEOGRAPHY TESTS

The United States

Points	1	2	3
Attempted	.....	.....	.....
Right	.....	.....	.....

Name ..... School ..... Room .....

I. Draw, on the space below, an outline of the United States.

II. On the map just drawn, write the names of what bounds the United States on all sides.

III. Draw an outline, on the above map, of the State in which you live. Locate the capital of your State by means of a small circle. Write its name.

WITHAM'S STANDARD GEOGRAPHY TESTS

Points	4	5	6	7	8
Attempted	.....	.....	.....	.....	.....
Right	.....	.....	.....	.....	.....

On the printed outline, map on the opposite page, neatly letter the names of the following features. You may use abbreviations.

IV. Rivers

1. Mississippi
2. Ohio.
3. Columbia
4. Colorado
5. Missouri
6. Hudson
7. Connecticut
8. Rio Grande
9. Arkansas
10. Susquehanna

V. Mountains

1. Appalachian
2. Coast Range
3. Cascade and Sierra Nevada
4. Rocky
5. White

VI. Lakes, Bays, and Gulfs

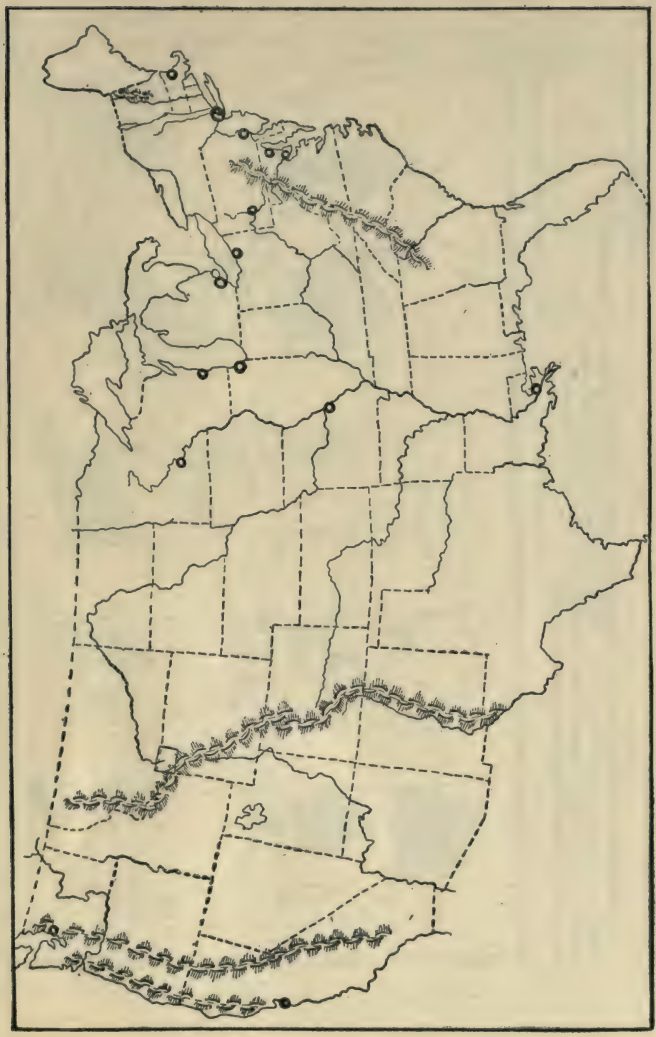
1. Great Lakes (name all five)
2. Great Salt Lake
3. Lake Champlain
4. Gulf of Mexico
5. Massachusetts Bay

VII. Cities

1. Chicago
2. New York
3. San Francisco
4. St. Louis
5. Boston
6. Philadelphia
7. Baltimore
8. Cleveland
9. Pittsburgh
10. Washington, D. C.
11. Detroit
12. Milwaukee
13. Minneapolis
14. Seattle
15. New Orleans

VIII. States

1. Texas
2. Maine
3. Florida
4. Colorado
5. Indiana

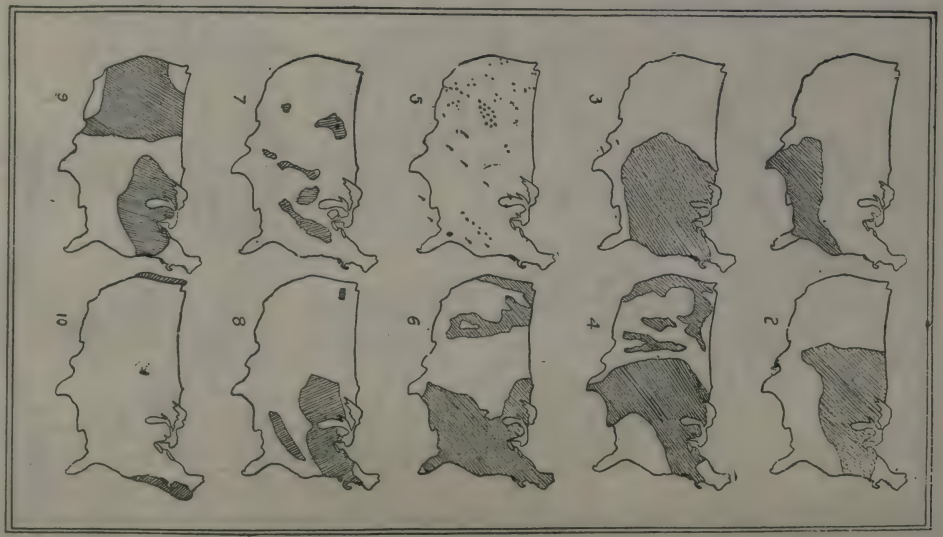


Permission of J. L. Hammett Co.

IX. Industrial Regions.

Points	9
Attempted	
Right	

The following industrial regions are printed below: Cotton, Corn, Gold & Silver, Coal & Iron, Wheat, Sheep, Cattle, Forests, Manufactures and Fisheries. Each map shows one of the industrial regions. They are not given in order. Write the name of each industry across the map which shows its location.



Witham. Permission J. L. Hammett Co.

TOTAL SCORE

Attempts .....

Rights .....

CLASS RECORD SHEET

F	S	Sc I	F	S
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc II	F	S
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc V	F	S
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc III	F	S
		2		
		1		
		0		

Sum

Ave.

F	S	Sc IV	F	S
		10		
		9		
		8		
		7		
		6		
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc VI	F	S
		9		
		8		
		7		
		6		
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc VII	F	S
		15		
		14		
		13		
		12		
		11		
		10		
		9		
		8		
		7		
		6		
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc VIII	F	S
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

F	S	Sc IX	F	S
		10		
		9		
		8		
		7		
		6		
		5		
		4		
		3		
		2		
		1		
		0		

Sum

Ave.

4. THE ADAMS GRADED GEOGRAPHY TEST

In most cases, the elementary schools consist of eight grades. This is especially true of the rural schools. For this reason, the Adams geography scale was prepared to cover the entire eight grades. The scale can be used just as efficiently where geography is completed in the seventh grade. One needs only to combine the first and second year nature study into one grade.

Tests for grades one, two, and three are nature tests, while the other five are for geography.

The questions in the scale have been carefully prepared and are based on the course of study found in Chapter IX. The purpose of the scale is to test memory, thought, and power of observation, as well as to test the pupil's knowledge of the different phases of geography, that is, nature study, home geography, State, United States, world, regional, physical, industrial and commercial geography.

In giving the test for promotion from grade to grade, use two tests. For example, suppose the class is to be promoted from the fifth to the sixth grade. The teacher may give the fifth grade test alone or both the fourth and fifth grade tests, and may then average the results. Promotion should be based upon making a score of 70 per cent or better.

For convenience, a grade of 10, or value of 10 points, has been assigned to each question. It is evident that all questions are not of equal difficulty. However, it is more convenient to give them a value of ten because

most schools keep their records on the 100 per cent plan. If the tests are given as a general test for the eight grades, the pupils should be able to answer 75 per cent of the entire number of 80 questions. If given for promotion tests, the first grade should make a score of 80; the second grade, 75; the third, 73; the fourth, 73; the fifth, 73; the sixth, 75; the seventh, 74; the eighth, 75 per cent. In scoring tests mark each answer on a basis of ten and add results for score of any grade.

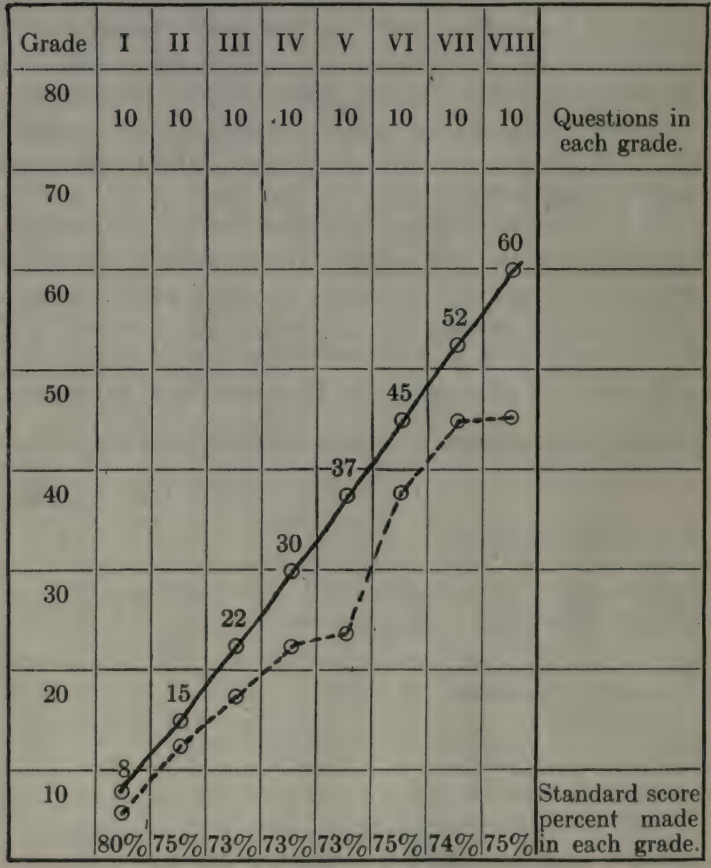
The table below shows tentative scores, the number of questions in each grade, the number of correct answers given, and the median for each grade. After testing pupils and grading their tests compare the scores made with those in the table below. The table will serve as a standard. If pupils fall below the

Table of Tentative Standard Scores:—Adams Geography Tests.

GRADE	I	II	III	IV	V	VI	VII	VIII
No. questions in each test	10	10	10	10	10	10	10	10
Total No. Questions	10	20	30	40	50	60	70	80
Number of correct answers when used as a general test	8	15	22	30	37	45	52	60
Average percent for each grade when used separately for promotion	80	75	73	73	73	75	74	75

standard, the work is poor; if above the standard, the work is good.

Graph of Standard Score:—Adams Geography Scale.



The figures at left show the entire number of questions in the scale; the graph shows those answered.

Score made in a certain school—Grade I, 7; Grade II, 12; Grade III, 18; Grade IV, 22; V, 23; VI, 38; VII, 45; VIII, 46.

The broken line (p. 108) shows the score made in a certain school. Any school using the course of study on which the Adams Scale is based may be tested in the same manner.

5. THE ADAMS SCALE—GEOGRAPHY TESTS*

GRADE I.—NATURE STUDY (ORAL)

Tests of Observation

1. Indicate the different directions in the schoolroom.
2. Indicate the directions where sun rises and sets.
3. Name four kinds of birds you know.
4. Name four kinds of flowers.
5. Name four kinds of trees.
6. Name four kinds of vegetables.
7. Name four kinds of grain.
8. Name four kinds of fruit.
9. Name four kinds of insects.
10. Name four occupations. Score.....

GRADE II.—NATURE STUDY (ORAL)

1. Name the days of the week in order. (Memory.)
2. Name the months of the year in order. (Memory.)
3. Which months are the coldest? (Thought.)
4. Which months are the warmest? (Thought.)
5. Name the seasons of the year. (Memory.)
6. In which months do we have the warmest weather? (Thought.)

*Prepared by W. C. T. Adams, Department of Education, State Normal School. Plymouth, N. H.

7. What is the difference between town and country. (Comparison.)
8. Tell time by the clock. (Thought.)
9. Distinguish fog, dew, clouds, steam, ice. (Observation.)
10. In which months do we plant seeds?

Score.....

GRADE III.—NATURE STUDY (WRITTEN)

1. If rural child, name five wild flowers. If city child, name five park flowers.
2. Below are the names of wild animals and domestic animals. Draw a circle around the names of the wild animals; horse, deer, dog, rabbit, bear, cow, fox.
3. Name five products that are raised on the farm.
4. Why are birds useful to man?
5. Of what are shoes made?
6. Of what kinds of material do we make clothes? (At least two materials, cotton and wool, should be known.)
7. From what kinds of grain is flour made? meal? graham?
8. Below are names of vegetables, fruits and grain. Draw a line under the grains: corn, potatoes, peas, apples, wheat, beans, plums, cherries.
9. In which direction is the sun at noon?
10. At what time of day is your shadow the longest?

Score.....

GRADE IV.—CONCRETE GEOGRAPHY

1. Which is the longest day in the year? Which is the shortest? (Observation.)
2. What is a hill? plateau? valley? brook? pond? lake? river? (Type form.)

3. Locate your city; give its size and industries; name places of importance near by.
4. Draw a map of your school grounds.
5. What is a continent? island? peninsula? cape?
6. Draw a map of your state.
7. Locate three cities and tell one thing for which each is noted.
8. Name the important rivers of your State.
9. What are the important industries of your State?
10. Name some places of interest in your State. Tell why they are interesting.

Score.....

GRADE V.—WORLD GEOGRAPHY

1. (*a*) What proportion of the earth's surface is land, and what proportion is water?
   (*b*) Locate each continent.
   (*c*) Locate the oceans; name them in the order of their size.

North America

2. (*a*) What is the location of North America?
   (*b*) What is the form of North America?
   (*c*) What is the size of North America?
3. Name the natural divisions of North America.
4. Name and locate the chief mountain ranges of North America.
5. Name and locate the important rivers of North America.
6. Name and locate the political divisions of North America.

United States

7. Locate the United States.
   (*a*) Compare the United States with Canada.

(*b*) What is the size of the United States?
(*c*) What is the climate of the United States?
(*d*) What are the natural products of the United States?
(*e*) What are the industries of the United States?
(*f*) Draw a map of the United States.
(*g*) Locate five important cities of the United States.
(*h*) Locate five important rivers of the United States.

8. Compare Maine and California as to
   (*a*) Size.
   (*b*) Climate.
   (*c*) Industries.
   (*d*) Natural resources.
9. The State of Washington is farther north than Iowa. Why is it warmer in Washington?

Score.....

GRADE VI

1. What causes day and night?
2. What causes the change of seasons?
3. Give the size and form of the earth.
4. Define latitude and longitude.

Sectional Geography

5-6. (*a*) Give the location of your section of the United States.
   (*b*) Name the States in your section.
   (*c*) Name five leading industries of your section.
   (*d*) Name the five principal cities of your section. For what is each noted.
   (*e*) Name the five principal rivers of your section. What cities are located on these rivers?
   (*f*) Compare your section with some other section as to climate, relief, commerce, size.

State Geography

7-8. (*a*) Give the location of your State.
(*b*) Name the counties of your State.
(*c*) Name five leading industries of your State.
(*d*) Name the five principal cities of your State. For what is each noted?
(*e*) Name the five principal rivers of your State. What cities are located on these rivers?
(*f*) Compare your section with some other section as to climate, relief, commerce and size.

9-10. Name the dependencies of the United States.
(*a*) Give the location of each.
(*b*) For what is each noted?

Score.....

GRADE VII

1. Locate Great Britain.
2. Compare Great Britain with Canada.
3. What is the size of Great Britain.
4. What is the climate of Great Britain?
5. What are the natural products of Great Britain?
6. What are the industries of Great Britain?
7. Draw a map of Great Britain
8. On the outline map you drew locate five important cities.
9. Locate five large rivers.
10. Great Britain is farther north than the New England section. Why is Great Britain warmer?

GRADE VIII. COMMERCIAL GEOGRAPHY

1. Name ten leading commodities of the world. Where found?
2. Name five textiles, five minerals, five foods. Where is each found?

3. Name five agencies which affect climate.
4. Name the leading industries of the United States.
5. Name the leading markets of the world and state for what each is especially noted.
6. Name ten commercial centers of the United States. For what is each noted?
7. Name five great trade routes of the world.
8. Name five trunk line railroads in United States.
9. Name ten exports of United States. To where?
10. Name ten imports. From where?

Score.....

CHAPTER X

A COURSE OF STUDY IN GEOGRAPHY

The study of geography as a distinct subject usually begins in the third or fourth year of school. As has been stated, nature study is so related to geography that we may consider it the correlating center. For this reason we shall give a suggestive outline of nature study.

As an introduction to the study of geography the teacher should take occasion in the first, second and third grades to give bright and interesting talks on familiar nature subjects. This may be done two or three times a week. The aim in nature study is to develop a sense of delight in nature and a kinship with living things through interesting play with nature material.

1. FIRST GRADE—NATURE STUDY

1. Natural phenomena: observation of the sun, the moon, the stars, the clouds, rain, snow, the sunset, the rainbow, shadows.
2. Directions: within the school, from the school, from other places.
3. Observations of animals: cat, dog, rabbit, squirrel. Care of domestic animals. Wild animals observed, if in a rural community.

4. Birds and flowers: names, colors, sizes, forms, homes, habits and peculiarities.
5. Butterflies, caterpillars, moths, ants, bees, flies, and spiders.
6. The planting of seeds, care of the plants.
7. The names of trees of the neighborhood: color, form and size of their leaves.
8. Making collections of stones, shells, acorns, chestnuts, cones, mosses, etc.
9. Visits to fruit-stands, shops, etc.
10. The telling of stories by teacher and pupils.
11. Reading by the teacher in the earlier grades of such books as, "Round the Year in Myth and Song."
12. The use of pictures of animals, birds, etc.

2. SECOND AND THIRD GRADES—NATURE STUDY

This work will be continued in the second and third grades. It is called concrete geography.

Concrete Geography

1. Purpose; to give the child in the simplest and most graphic form certain fundamental facts about the world in which he lives.
2. Means; through observation and experiences under the suggestion and guidance of the teacher.
3. Content or subject matter:
   (*a*) Direction: Cardinal and semi-cardinal points. Connect all places talked of with direction.
   (*b*) Distance: Develop accurate ideas of the mile, half-mile; develop accurate ideas of the hour, day, week, month and year as units of thought in time; discuss with pupils the different modes of travel familiar to them. Train them to make distances

real to themselves by translating them into units of time in connection with walking from home to school, riding in a street car across the city, on the railroad, etc.

(*c*) Topography: Observations of type forms in the neighborhood may be made in field lessons.

(*d*) 1. People of the vicinity: Compare country and city life; occupations and their relations to the seasons of the year, manner of living, etc. 2. Public buildings; the court house, post office, public library, railway station, hospital.

(*e*) Landscape: Train children to see out-of-door pictures, to recognize the beauty in the landscape and to notice the life around them in various forms. Use many pictures in connection with the above.

(*f*) Plants: Children should know the common wild flowers of their region. Those to be used as material for drawing lessons should be carefully studied. The different kinds of trees in the neighborhood should be carefully studied. Children should know something of the life of plants in summer and winter, their needs and conditions for growth, their habits, their friends and enemies.

(*g*) Animals: Common domestic animals; make a special study of the usefulness of the cow and sheep with reference to our food and clothing. Wild animals; study those seen in the circus or in the zoological gardens.

(*h*) Birds: Children should know the common birds through their pictures, and should study as many as possible out-of-doors, noticing their adaptation to environment, their covering, food, homes, and

uses. Teach children to respect the rights of birds and animals. Explain the laws of the State for the protection of animal life.

(*i*) Weather and wind: As nature gives opportunity observe cloud, fog, dew, rain, snow, hail, ice, and frost. Notice the directions, feeling and uses of the wind. Observe the effects of the weather on plants, animals and man. Let the children observe the good illustrations in nature of condensation and evaporation, expansion of water by freezing, etc. Connect these phenomena with seasons of the year. Teach the year, months and seasons. Keep a simple weather record on the blackboard.

(*j*) Moon: Compare the moon with the sun. Notice the places of rising and setting. Teach the meaning of the following terms: new, full, crescent and waning.

(*k*) Sun: Time and places of rising and setting. Notice the difference in position of the sunlight in the room and the height of the sun in the sky at noon. Teach children to observe their shadows. Have them notice the length and direction of the shadows at the different times of the day. Relate these observations with facts connected with temperature and the seasons.

(*l*) Stars: Children should be able to recognize the Great Dipper, the Pole Star, the Milky Way, the Little Dipper, Orion and the Evening Star.

References: For the teacher:

"Nature Study"—Jackman.

"Nature Study and Life"—Dodge.

For the children:

"A Geography Primer"—Cornman and Gerson.

"Home Geography"—Fairbanks.

"The Storyland of Stars"—Pratt.

FOURTH GRADE (FIRST HALF-YEAR)

I. Concrete Geography

1. Observations:
   (*a*) Weather records throughout the year should include the sun's path, temperature, winds and seasons. Records may be kept in note-books. At intervals, comparisons should be made and facts established—as warmest day of the summer, longest day of the year, etc.
   (*b*) Type forms in the neighborhood:
      1. Plain, plateau, hill, valley.
      2. Brook, pond, lake and river.
      3. Shore forms.

In order to give the child concrete experiences to serve as a basis for his interpretation of geography, type forms should be studied as field work. Pictures are valuable in connection with this part of the work.

References:

"Home Geography"—Tarr and McMurry.

"The Earth and Its People"—Winslow.

"Niver's Elementary Geography."

II. Regional Geography (Boston and Vicinity)*

1. State maps should be shown; city maps studied; rough sketches of the city drawn on the blackboard.

* Note—This is a suggestive outline which may be applied to any section of the United States

(*a*) Location of Boston.
(*b*) Extent of Boston.
(*c*) Natural features of Boston.
(*d*) Industries of Boston.
(*e*) History of Boston.
(*f*) Relations to the surrounding cities and towns:
1. Boston (state capital).
2. Springfield.
3. Revere Beach (summer resort).
4. Nantasket (summer resort).
5. Cambridge (stories and historical events).

"Massachusetts and Its People," and the "Early History of Boston." Stories of Massachusetts by various authors.

4. FOURTH GRADE (SECOND HALF-YEAR)

The value of maps, models, pictures, and excursions cannot be overestimated. Expression — drawing, modeling, graphing, and writing should be employed freely.

I. Preparation for Map Study

(*a*) Plans of the school-room, school-house, school-yard, neighborhood and home. Pupils should make rough sketches, paying little attention to scale. They may get their idea of scale from the comparison with city, county, State, United States or North American maps.
(*b*) Application of points of compass to neighborhood plans or sketches.
(*c*) Study of map symbols.
(*d*) Study on map and globe of hemispheres, with special reference to continents.
(*e*) Attention given to regional map study.

References: Same as for the first half-year.

II. Journey Geography

To discover our social relationships.

1. Countries to be visited. Locate each country on the map and trace the route of travel.
   (*a*) Cold countries: Alaska, Greenland, Russia.
   (*b*) Hot countries: Africa and India.
   (*c*) Germany.
   (*d*) Holland.
   (*e*) France.
   (*f*) Switzerland.
   (*g*) China.
   (*h*) Japan.
   (*i*) Indian homes in the United States.

References:

"A Geography Primer"—Cornman and Gerson.
"The Earth and Its People"—Winslow.
"Niver's Elementary Geography."

III. Study of the Children of the Countries Visited

1. Children of the cold countries.
2. Children of the hot countries.
3. Children of the desert.
4. Chinese and Japanese children.
5. German children.
6. Dutch children.
7. French children.
8. Swiss children.
9. Indian children.

References:

"Seven Little Sisters"—Andrews.
"The Children of the Cold"—Schwatka.

"Snow Baby"—Peary.
"Little Folks of Other Lands"—Humphrey.
"Little Folks of Many Lands"—Chance.
"Land of the Long Night"—Du Chaillu.
"Our Little Japanese Cousins"—Wade.
"Our Little German Cousins"—Wade.
"Our Little Swiss Cousins"—Wade.
"Our Little Indian Cousins"—Wade.
"Boys of Other Countries"—Taylor.
"The Wide World"—Youth's Companion Series.

5. FIFTH GRADE

I. World Geography

1. Proportion of land and water.
2. Continents located and studied.
3. Oceans located and studied.
4. Hemispheres studied.
   (*a*) Eastern, western.
   (*b*) Northern, southern.
5. Draw map locating zones, parallels, meridians.
6. Determine shape, size and direction of continents.

References:

"Niver's Elementary Geography."
"Tarr, McMurry's New Geography," Book I.

II. North America as a Whole

1. Position.
2. General form and size.
3. Relief.
4. Drainage.
5. Climate.

6. Life in the different sections (determined by relief and climate). Stress regional map study.
7. Occupations and industries (determined by relief and climate).

III. United States as a Whole

According to an outline similar to that of North America.

IV. Canada, Mexico, Central America and South America

Similar to the above outlines.

V. Europe as a Whole

Same outline as that of North America.

VI. Asia as a Whole

Same outline as that of North America.

6. SIXTH GRADE

I. South America as a Whole

Same outline as that of North America.

II. Africa as a Whole

Same outline as that of North America.

III. Australia

Same outline as that of North America.

IV. General Geography

1. Shape and size of the earth.
2. Movements of the Earth.
3. Latitude and longitude and standard time.
4. Winds and storms.
5. Movement of the ocean.
6. Relief forms and agencies producing these forms.
7. Climate.

8. Distribution of plants and animals.
9. Peoples.

V. North Central Section of States

1. Location.
2. Coastline.
3. Relief. (Emphasize study of region maps.)
4. Drainage.
5. Climate.
6. People.
7. Occupations and industries.
8. Commerce.
9. Cities.

VI. Massachusetts. (Suggestive Only. Any State may be used.)

1. Location.
2. Early history.
3. Relief and drainage.
4. Climate.
5. Occupations and Industries.
6. Commerce.
7. Cities.
8. Schools.

VII. Other Sections Treated as Above

VIII. Dependencies of the United States

Alaska.
Hawaii.
Philippines.
Porto Rico.
Cuba.
Panama.

References:

"Niver's Elementary and Advanced Geographies."
"Tarr and McMurry's New Geographies."
"King's Geographies."
"Frye-Atwood Geographies."

7. SEVENTH GRADE

I. British Empire

Same outline as that of the United States.

II. Dependencies of Great Britain

Canada.
India.
Australia.
New Zealand.
Egypt and South Africa.

III. France and Her Dependencies

Same outline as that for the United States.

IV. European and Asiatic Russia

Same outline as that for the United States.

V. Scandanavian Countries, The Netherlands, Austria, Italy, Spain, and Portugal

Not so full a treatment.

VI. China and Japan

VII. Brazil, Argentina and Chile

8. EIGHTH GRADE

1. Climatic conditions.
2. Belts of vegetation.
3. Relief.

4. Areas of production.
5. Great commodities of the world.
   (*a*) Textiles: cotton, linen, wool, silk, hemp.
   (*b*) Minerals: coal, iron, gold, silver, petroleum, lead, copper, and zinc.
   (*c*) Foods: wheat, corn, rice, oats, barley, tea, coffee, sugar, cows, cattle, etc.
6. Man's response to environment.
   1. Settlements.
   2. Industries.

I. Typical Markets of the World

1. Boston as a trade center. (Use any other large trading center.)
2. United States.
   (*a*) Factors governing production.
   (*b*) Commercial centers.
   (*c*) Routes and methods of transportation.
   (*d*) Exports.
   (*e*) Imports.
3. Great Britain, France, Germany, and Japan treated in the same manner.
4. Markets for Boston products. (Use any other city that meets the needs of your location.)

CHAPTER XI

REFERENCE BOOKS IN GEOGRAPHY

1. REFERENCE BOOKS AND MATERIALS FOR TEACHERS

1. The Teaching of Geography—Black.
2. Home Geography for Primary Grades—Fairbanks. (Educational Publishing Co.)
3. The New Basis of Geography—King. (Lothrop, Lee & Shepard)
4. Methods and aids in Geography—King.
5. Principles and Methods of Teaching Geography—Holtz (Macmillan)
6. The Teaching of Geography in Elementary Schools—Dodge and Kirchwey. (Rand, McNally)
7. Geography through the Stereoscope—Moore.
8. Special Methods of Teaching Geography—Holtz. (Macmillan)
9. Type Studies for Geography in U. S.—McMurry. (Macmillan)
10. Great American Industries. (Flanagan & Co.)
11. Special Methods in Geography—McMurry. (Macmillan)
12. The Teaching of Geography—Sutherland. (Scott Foresman & Co.)
13. Globes and Maps—Wiswell. (Rand, McNally & Co.)
14. Morrison's Outline Maps. (Hinds, Hayden & Eldredge)
15. Geography in School—Davis.

16. The Teaching of Geography—Geike. (Macmillan)
17. Manual of Commerce—Brown. (Publisher and author)
18. The World's Commercial Products.
19. The Earth and Man—Guyot. (Chas. Scribner Sons)
20. Lessons in New Geography—Trotter. (D. C. Heath & Co.)
21. Nature Study—Jackman. (A. Flanagan Co.)
22. Sand Modelling—Frye.
23. Commercial Geography—Adams. (D. Appleton & Co.)
24. A Journal of Geography.
25. Dana's or Le Conte's Geology.
26. Niver's Elementary and Advanced Geographies. (Hinds, Hayden & Eldredge)
27. Atwood's New Geography. (Ginn & Co.)

2. REFERENCES FOR SUPPLEMENTARY READING

North America

Brooks—Century Book of American Colonies. (Cent.)
Carpenter—North America. (A. B. C.)
Coe—Our American Neighbors. (S. B. C.)
Lyde—Man and His Markets. (Mac.)
Reynolds—The Americas. (Mac.)
Russell—North America. (App.)

United States

Allen—Industrial Studies (United States). (Ginn)
Bacon—Historic Pilgrimages in New England. (S. B. C.)
Baedeker—The United States. (Scrib.)
Brown—The Glory Seekers. (McC.)
Bryce—The American Commonwealth. (Mac.)
Burkett—Cotton. (Doub.)
Cody—True Tales of the Plains. (C. & L.)

Condra—Geography of Nebraska. (U. P. C.)
Cooley—Michigan. (H. M. C.)
Darling—Illinois. (Mac.)
Emerson—New England States. (Mac.)
Fiske—How the United States became a Great Nation (Ginn)
Fultz—Out of Door Studies in Geography. (P. S. C.)
Gilbert—Niagara Falls and their History. (A. B. C.)
Grohman—Camps in the Rockies. (Scrib.)
Hall—Geography of Minnesota. (H. W. N.)
Hayes—The Southern Appalachians. (A. B. C.)
Johnson—New England and Its Neighbors. (Mac.)
Kingsley—The Story of Lewis and Clark. (A. B. C.)
Kipling—Captains Courageous. (Cent.)
Littlejohn—Texas. (Mac.)
Lummis—Some Strange Corners of our Country. (Cent.)
McMurry—Type Studies from the Geography of the United States. (Mac.)
Newell—Irrigation in the United States. (Crow.)
Parkman—The Oregon Trail. (L. B.)
Patton—The Natural Resources of the United States (App.)
Ries—Economic Geology of the United States. (Mac.)
Shaw—Uncle Sam and His Children. (A. S. B.)
Southworth—Story of the Empire State. (App.)
Stanchfield—Lumbering in Minnesota. D. Stanchfield) Minneapolis
Stevenson—Across the Plains. (Scrib.)
Tarr—Economic Geology of the United States. (Mac.)
Thompson—From Cotton Field to Cotton Mill. (Mac.)
Van Dyke—The Desert. (Scrib.)
Waldo—Elementary Meteorology. (A. B. C.)

Willard—Story of the Prairies. (Rand)
Willoughby—Across the Everglades (J. B. L.)
Young—The Cotton Industry. (Scrib.)

Dependencies of the United States

Alexander—A Brief History of the Hawaiian People (A. B. C.)
Baldwin—Geography of the Hawaiian Islands. (A. B. C.)
Carpenter—North America and Australia. (A. B. C.)
DeWindt—Through the Gold Fields of Alaska to Behring Strait. (Harp.)
Edwards—Into the Yukon. (R. Clarke Co., Cinn.)
Greeley—Alaska. (Scrib.)
Hall & Chester—Panama and the Canal. (Newson & Co.) New York.
Herbertson—Descriptive Geography of North America. (Mac.)
Higginson—Alaska, the Great Country. (Mac.)
Jernegan—Philippine Geography. (Heath)
Wallace—Island Life. (Mac.)
Whitney—Hawaiian America. (Harp.)
Worcester—The Philippine Islands and Their People. (Mac.)
Young—The Real Hawaii. (Doub.)
Younghusband—The Philippines and Round About. (Mac.)

Northern Countries of North America

Butler—Wild Northland, a Winter with a Dog. (A. S. B.)
Hatton & Harvey—Newfoundland. (Doyle & Whipple) Boston
Morely—Down North and Up Along. (Dodd)

Muir—Travels in Alaska. (H. M. C.)
Parkin—The Great Dominion. (Mac.)
Plummer—Roy and Ray in Canada. (Holt)
Ralph—On Canada's Frontier. (Harp.)

Southern Countries of Northern America

Baedeker—The United States and Mexico. (Scrib.)
Calvo—The Republic of Costa Rica. (Rand)
Charles—Honduras. (Rand)
Coe—Our American Neighbors. (A. B. C.)
Carpenter—North America. (A. B. C.)
Carson—Mexico. (Mac.)
Enock—The Republics of Central and South America and their Resources. (Scrib.)
Fitzgerrell—Mexico City. (App.)
Griffin—Mexico of Today. (Harp.)
Hill—Cuba and Porto Rico. (Cent.)
Hornaday—Camp Fires on Deserts and Lava. (Scrib.)
Kingsley—At Last: A Christmas in the West Indies. (Mac.)
McGary—An American Girl in Mexico. (Dodd)
Plummer—Roy and Ray in Mexico. (Holt)
Rodway—The West Indies and the Spanish Main. (Put.)
Sheldon—Notes on Nicaragua Canal. (McC.)

General Geography

Buckham—Afield with the Seasons. (Crow.)
Burroughs—Afoot and Afloat. (H. M. C.)
Cook—Along Four-Footed Trails. (Pott)
Davis & Hughes—Math. & Phys. Geography. (H. N. & E.)
Foster—In the Forest. (Doub.)
Gaye—The Great World's Farm. (Mac.)

Gilbert & Brigham—Physical Geography. (App.)
Guyot—Earth and Man. (Scrib.)
Harrington—About the Weather. (App.)
Heilprin—Distribution of Animals. (App.)
Roosevelt—Hunting Trips of a Ranchman. (Put.)
Russell—Lakes of Noth America. (Mac.)
Schaler—The Story of Our Continent. (Ginn)
Shaler—Sea and Land. (Scrib.)
Singleton—Great Rivers of the World. (Dodd)
Smith—Organization of Ocean Commerce. (Ginn)
Stoneman—Plants and their Ways in South Africa. (L.G.)
Waldo—Elementary Meteorology. (A. B. C.)

3. SUPPLEMENTARY READERS FOR PUPILS

(Arranged by Grades)

GRADE I

1. Child Life Primer. (Macmillan Co.)
2. Indoors and Out. (Scribner's Sons)
3. Fox's Indian Primer. (American Book Company)
4. Child Life First Reader. (Macmillan Co.)

GRADE II

1. Indoors and Out. (Scribner's Sons.)
2. From September to June with Nature. (D. C. Heath Co.)
3. Around the World Series. (Silver, Burdett)
4 The Life of a Bean. (Century Company)

GRADE III

1. In Field and Pasture. (American Book Company)
2. Stories of Pioneer Life. (Heath & Company)
3. In the Animal World. (B. H. Sanborn & Co.)
4. Seth of Colorado. (American Book Company)

5. Merry Animal Tales. (Little, Brown & Co.)
6. Bradish, Stories of Country Life. (American Book Co.)

GRADE IV

1 The Rollo Books.
2. Little Folks in Fur and Feathers.
3. Our Cousins in Other Lands.
4. Seven Little Sisters—Miss Andrews. (Ginn & Co.)
5. Under Foot—Miss Nichols.
6 Animal Life—Miss Marwood.
7. Peter of Amsterdam—(American Book Co.)
8. Ruth of Boston—(American Book Co.)
9. Fritz of Germany—(Little, Brown & Co.)

GRADE V

1 Completion of Books in Class Four.
2. Little People of Asia—Miller.
3. Geographical Readers—Warren.
4 Boys of Other Countries—Taylor.
5. Round the World by a Boy—Smiles.
6. Spectacles for Young Eyes—Landor.
7. Donald of Scotland—(Little, Brown & Company)
8. Merry Animal Tales—(Little, Brown & Company)

GRADE VI

1. The Sunny South—Ingraham.
2. A Trip Eastward—Abbot
3. Cast Away in the Cold—Hayes.
4. Jordan's True Tales of Birds and Beasts—(Heath & Co.)
5. Story of Lewis and Clark—(American Book Co.)
6. Mary of Plymouth—(American Book Co.)
7. Calvert of Maryland—(American Book Co.)
8 Carpenter's Geographical Readers—(Amer. Book Co.)

9. Collete of France—(Little, Brown & Co.)
10. Kathleen of Ireland—(Little, Brown & Co.)

GRADE VII

1. Knocking around the Rockies—Ingersoll.
2. Vassar Girls Abroad—Mrs. Champney.
3. Hans Brinker—Dodge. (Charles Scribner Sons.)
4. Artic Explorations—Kane.
5. Rocky Mountains—Miss Bird.
6. Commercial Geography—Davis & Hughes. (Hinds, Hayden & Eldridge)
7. Home Life in Germany—Brace.
8. Ocean Wonders—Damon.
9. Great Inventions and Discoveries—(C. E. Merrill Co.)
10. Carpenter's Geographical Readers—(Amer. Book Co.)
11. Burrough's, Birds and Bees—(Houghton, Mifflin)

GRADE VIII

1. South America—Carpenter. (American Book Co.)
2. On the Banks of the Amazon—Kingston.
3. Through the Dark Continent—Stanley.
4. Modern Egyptians—Lane.
5. Japan—Bird.
6. Little People of Asia—Miller.
7. Burrough's, Afoot and Afloat—(Houghton, Mifflin Co.)
8. Carpenter's Geographical Readers—(Amer. Book Co.)

These are but a few of the many excellent books for supplementary reading.

4. BIBLIOGRAPHY IN GEOGRAPHY

1. The Teaching of Geography—Black.
2. Home Geography for Primary Grades—Cornman & Gerson.

3. New Basis of Geography, 1901—Redway.
4. The Land We Live In—King.
5. Methods and aids in Geography, 1907—King.
(Lothrop, Lee & Shepard Co.)
6. Principles and Methods of Teaching Geography—Holtz.
(Macmillan Co.)
7. Teaching of Geography, 1913.
8. Geography through the Stereoscope, 1907—Moore.
9. Special Method of Teaching Geography—E. L. Holtz.
10. Type Studies from Geography in U. S.—Charles Murry.
11. Relation of Geography and History—H. B. George.
12. Geographic Influences in American History—Tarr.
13. Progress of Geography in Schools—First Year Book, Part II, 1902.
14. Function of Geography in the Elementary Schools—Journal of Geography, Vol. III, page 222, 1904.
W. C. Bagley.
15. Special Method in Geography, 1899—McMurry.
(Macmillan Co.)
16. How to Teach Geography, 1892—Parker.
17. Teachers' Manual of Geography, 1912—Redway.
(D. C. Heath & Co.)
18. Globes and Maps, 1913—Morrison.
19. Teaching of Geography, 1909—Sutherland.
(Scott, Foresman & Co.)
20. Geography in School, 1902—Davis.
21. Teaching Geography, 1892—Geike.
22. The International Encyclopedia.
23. Encyclopedia of Education.

Observation Method
Journey "
Type "
Map drawing "
Topical "
Project "
Problems "

178884

Educat.
Teach.
A.

Author Adams, William Charles Theodore

Title Practical methods for teaching elementary

University of Toronto
Library

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